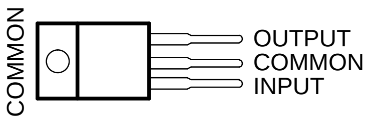
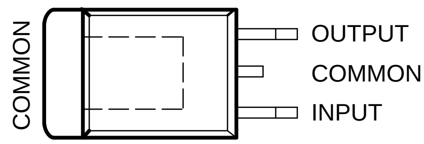
FEATURES

- **3-Terminal Regulators**
- **Output Current up to 500 mA**
- **No External Components**
- **Internal Thermal-Overload Protection**
- **High Power-Dissipation Capability**
- **Internal Short-Circuit Current Limiting**
- **Output Transistor Safe-Area Compensation**

KC (TO-220) PACKAGE
(TOP VIEW)

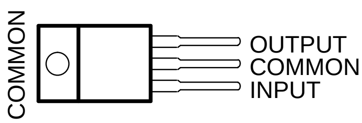


KTP (PowerFLEX™/TO-252*) PACKAGE
(TOP VIEW)

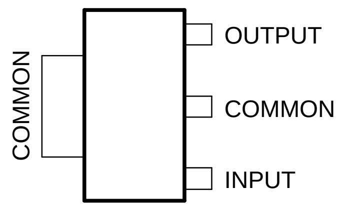


* Complies with JEDEC TO-252, variation AC

KCS (TO-220) PACKAGE
(TOP VIEW)



DCY (SOT-223) PACKAGE
(TOP VIEW)



DESCRIPTION/ORDERING INFORMATION

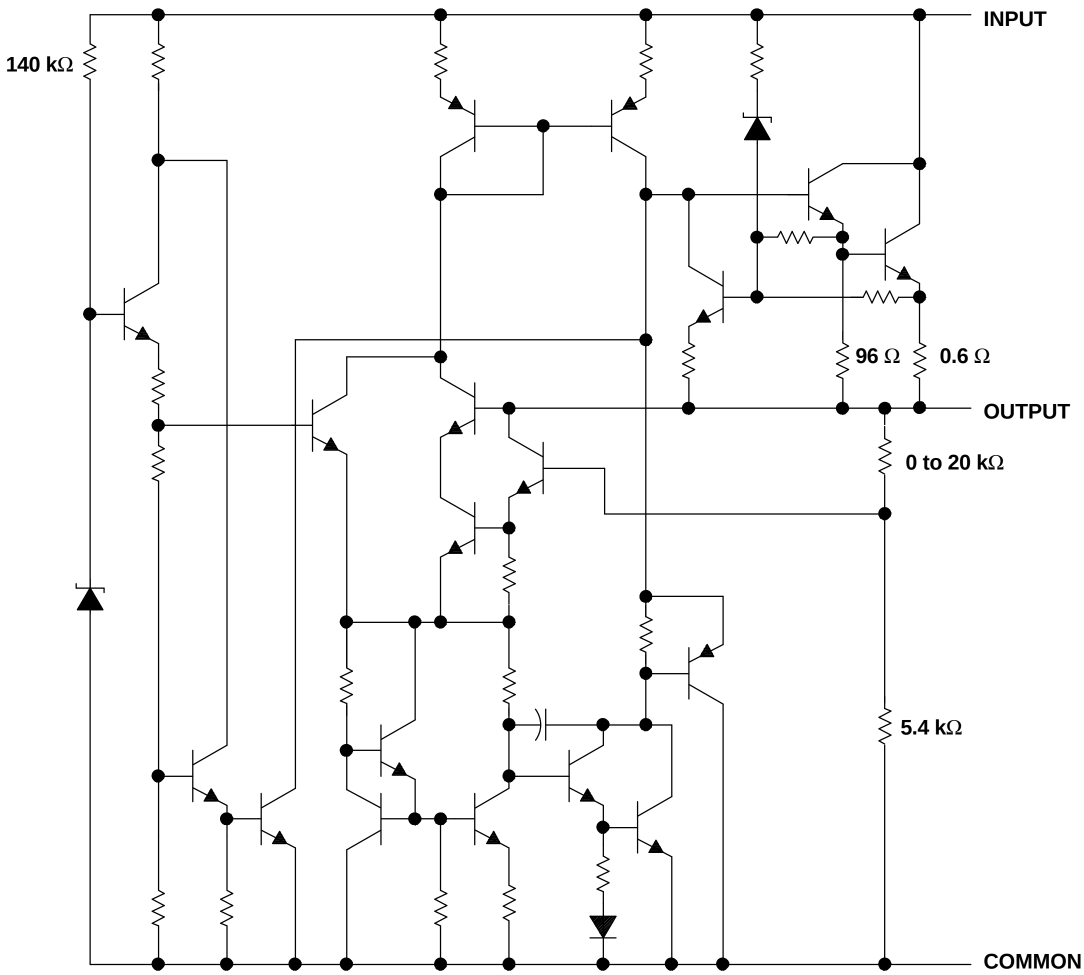
This series of fixed-voltage integrated-circuit voltage regulators is designed for a wide range of applications. These applications include on-card regulation for elimination of noise and distribution problems associated with single-point regulation. Each of these regulators can deliver up to 500 mA of output current. The internal current-limiting and thermal-shutdown features of these regulators essentially make them immune to overload. In addition to use as fixed-voltage regulators, these devices can be used with external components to obtain adjustable output voltages and currents and also as the power-pass element in precision regulators.

ORDERING INFORMATION

T_A	V_O(NOM) (V)	PACKAGE(1)		ORDERABLE PART NUMBER	TOP-SIDE MARKING
0°C to 125°C	3.3	PowerFLEX™/TO-252(2) – KTP	Reel of 3000	μA78M33CKTPR	UA78M33C
		SOT-223 – DCY	Tube of 80	μA78M33CDCY	C3
			Reel of 2500	μA78M33CDCYR	
		TO-220 – KC	Tube of 50	μA78M33CKC	UA78M33C
	5	PowerFLEX/TO-252(2) – KTP	Reel of 3000	μA78M05CKTPR	UA78M05C
		SOT-223 – DCY	Tube of 80	μA78M05CDCY	C5
			Reel of 2500	μA78M05CDCYR	
		TO-220 – KC	Tube of 50	μA78M05CKC	UA78M05C
		TO-220, short shoulder – KCS	Tube of 20	μA78M05CKCS	
	6	PowerFLEX/TO-252(2) – KTP	Reel of 3000	μA78M06CKTPR	UA78M06C
	8	PowerFLEX/TO-252(2) – KTP	Reel of 3000	μA78M08CKTPR	UA78M08C
		SOT-223 – DCY	Tube of 80	μA78M08CDCY	C8
			Reel of 2500	μA78M08CDCYR	
		TO-220 – KC	Tube of 50	μA78M08CKC	UA78M08C
	9	PowerFLEX/TO-252(2) – KTP	Reel of 3000	μA78M09CKTPR	UA78M09C
	10	PowerFLEX/TO-252(2) – KTP	Reel of 3000	μA78M10CKTPR	UA78M10C
	12	PowerFLEX/TO-252(2) – KTP	Reel of 3000	μA78M12CKTPR	UA78M12C
		TO-220 – KC	Tube of 50	μA78M12CKC	UA78M12C
–40°C to 125°C	5	PowerFLEX/TO-252(2) – KTP	Reel of 3000	μA78M05IKTPR	UA78M05I
		SOT-223 – DCY	Tube of 80	μA78M05IDCY	J5
			Reel of 2500	μA78M05IDCYR	
		TO-220 – KC	Tube of 50	μA78M05IKC	UA78M05I
		TO-220, short shoulder – KCS	Tube of 20	μA78M05IKCS	

(1) Package drawings, standard packing quantities, thermal data, symbolization, and PCB design guidelines are available at www.ti.com/sc/package.
(2) Complies with JEDEC TO-252, variation AC

SCHEMATIC



Resistor values shown are nominal.

Absolute Maximum Ratings[1]

over virtual junction temperature range (unless otherwise noted)

		MIN	MAX	UNIT
V_I	Input voltage		35	V
T_J	Operating virtual junction temperature		150	°C
T_{stg}	Storage temperature range	–65	150	°C

(1) Stresses beyond those listed under "absolute maximum ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated under "recommended operating conditions" is not implied. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability.

Package Thermal Data[1]

PACKAGE	BOARD	θ_{JP} [2]	θ_{JC}	θ_{JA}
PowerFLEX/TO-252 – KTP	High K, JESD 51-5	1.4°C/W	19°C/W	28°C/W
SOT-223 – DCY	High K, JESD 51-7		30.6°C/W	53°C/W
TO-220 – KC/KCS	High K, JESD 51-5	3°C/W	17°C/W	19°C/W

(1) Maximum power dissipation is a function of T_J(max), θ_{JA}, and T_A. The maximum allowable power dissipation at any allowable ambient temperature is $P_D = (T_J(max) – T_A)/\theta_{JA}$. Operating at the absolute maximum T_J of 150°C can affect reliability.
(2) For packages with exposed thermal pads, such as QFN, PowerPAD™, or PowerFLEX, θ_{JP} is defined as the thermal resistance between the die junction and the bottom of the exposed pad.

Recommended Operating Conditions

			MIN	MAX	UNIT
V_I	Input voltage	µA78M33	5.3	25	V
		µA78M05	7	25	
		µA78M06	8	25	
		µA78M08	10.5	25	
		µA78M09	11.5	26	
		µA78M10	12.5	28	
		µA78M12	14.5	30	
		µA78M15	17.5	30	
I_O	Output current			500	mA
T_J	Operating virtual junction temperature	µA78MxxC	0	125	°C
		µA78MxxI	–40	125	

Electrical Characteristics

at specified virtual junction temperature, V_I = 8 V, I_O = 350 mA, T_J = 25°C (unless otherwise noted)

PARAMETER	TEST CONDITIONS[1]		μA78M33C			UNIT
			MIN	TYP	MAX	
Output voltage[2]	I_O = 5 mA to 350 mA, V_I = 8 V to 20 V		3.2	3.3	3.4	V
		T_J = 0°C to 125°C	3.1	3.3	3.5	
Input voltage regulation	I_O = 200 mA	V_I = 5.3 V to 25 V		9	100	mV
		V_I = 8 V to 25 V		3	50	
Ripple rejection	V_I = 8 V to 18 V, f = 120 Hz	I_O = 100 mA, T_J = 0°C to 125°C	62			dB
		I_O = 300 mA	62	80		
Output voltage regulation	V_I = 8 V,	I_O = 5 mA to 500 mA		20	100	mV
Temperature coefficient of output voltage	I_O = 5 mA,	T_J = 0°C to 125°C		–1		mV/°C
Output noise voltage	f = 10 Hz to 100 kHz			40	200	μV
Dropout voltage				2		V
Bias current				4.5	6	mA
Bias current change	I_O = 200 mA, V_I = 8 V to 25 V, T_J = 0°C to 125°C				0.8	mA
	I_O = 5 mA to 350 mA,	T_J = 0°C to 125°C			0.5	
Short-circuit output current	V_I = 35 V			300		mA
Peak output current				700		mA

(1) All characteristics are measured with a 0.33-μF capacitor across the input and a 0.1-μF capacitor across the output. Pulse-testing techniques maintain T_J as close to T_A as possible. Thermal effects must be taken into account separately.
(2) This specification applies only for dc power dissipation permitted by absolute maximum ratings

Electrical Characteristics

at specified virtual junction temperature, V_I = 10 V, I_O = 350 mA, T_J = 25°C (unless otherwise noted)

PARAMETER	TEST CONDITIONS[1]		μA78M05C			UNIT
			MIN	TYP	MAX	
Output voltage	I_O = 5 mA to 350 mA, V_I = 7 V to 20 V		4.8	5	5.2	V
		T_J = 0°C to 125°C	4.75		5.25	
Input voltage regulation	I_O = 200 mA	V_I = 7 V to 25 V		3	100	mV
		V_I = 8 V to 25 V		1	50	
Ripple rejection	V_I = 8 V to 18 V, f = 120 Hz	I_O = 100 mA, T_J = 0°C to 125°C	62			dB
		I_O = 300 mA	62	80		
Output voltage regulation	I_O = 5 mA to 500 mA			20	100	mV
	I_O = 5 mA to 200 mA			10	50	
Temperature coefficient of output voltage	I_O = 5 mA,	T_J = 0°C to 125°C		–1		mV/°C
Output noise voltage	f = 10 Hz to 100 kHz			40	200	μV
Dropout voltage				2		V
Bias current				4.5	6	mA
Bias current change	I_O = 200 mA, V_I = 8 V to 25 V, T_J = 0°C to 125°C				0.8	mA
	I_O = 5 mA to 350 mA,	T_J = 0°C to 125°C			0.5	
Short-circuit output current	V_I = 35 V			300		mA
Peak output current				0.7		A

(1) All characteristics are measured with a 0.33-μF capacitor across the input and a 0.1-μF capacitor across the output. Pulse-testing techniques maintain T_J as close to T_A as possible. Thermal effects must be taken into account separately.

Electrical Characteristics

at specified virtual junction temperature, V_I = 10 V, I_O = 350 mA, T_J = 25°C (unless otherwise noted)

PARAMETER	TEST CONDITIONS(1)		μA78M05I MIN	μA78M05I TYP	μA78M05I MAX	UNIT
Output voltage	I_O = 5 mA to 350 mA, V_I = 7 V to 20 V		4.8	5	5.2	V
		T_J = –40°C to 125°C	4.75		5.25	
Input voltage regulation	I_O = 200 mA	V_I = 7 V to 25 V		3	100	mV
		V_I = 8 V to 25 V		1	50	
Ripple rejection	V_I = 8 V to 18 V, f = 120 Hz	I_O = 100 mA, T_J = –40°C to 125°C	62			dB
		I_O = 300 mA	62	80		
Output voltage regulation	I_O = 5 mA to 500 mA			20	100	mV
	I_O = 5 mA to 200 mA			10	50	
Temperature coefficient of output voltage	I_O = 5 mA,	T_J = –40°C to 125°C		–1		mV/°C
Output noise voltage	f = 10 Hz to 100 kHz			40	200	μV
Dropout voltage				2		V
Bias current				4.5	6	mA
Bias current change	I_O = 200 mA, V_I = 8 V to 25 V, T_J = –40°C to 125°C				0.8	mA
	I_O = 5 mA to 350 mA,	T_J = –40°C to 125°C			0.5	
Short-circuit output current	V_I = 35 V			300		mA
Peak output current				0.7		A

(1) All characteristics are measured with a 0.33-μF capacitor across the input and a 0.1-μF capacitor across the output. Pulse-testing techniques maintain T_J as close to T_A as possible. Thermal effects must be taken into account separately.

Electrical Characteristics

at specified virtual junction temperature, V_I = 11 V, I_O = 350 mA, T_J = 25°C (unless otherwise noted)

PARAMETER	TEST CONDITIONS(1)			μA78M06C MIN	μA78M06C TYP	μA78M06C MAX	UNIT
Output voltage	I_O = 5 mA to 350 mA,	V_I = 8 V to 21 V		5.75	6	6.25	V
			T_J = 0°C to 125°C	5.7		6.3	
Input voltage regulation	I_O = 200 mA	V_I = 8 V to 25 V			5	100	mV
		V_I = 9 V to 25 V			1.5	50	
Ripple rejection	V_I = 8 V to 18 V,	f = 120 Hz	I_O = 100 mA, T_J = 0°C to 125°C	59			dB
			I_O = 300 mA	59	80		
Output voltage regulation	I_O = 5 mA to 500 mA				20	120	mV
	I_O = 5 mA to 200 mA				10	60	
Temperature coefficient of output voltage	I_O = 5 mA,	T_J = 0°C to 125°C			–1		mV/°C
Output noise voltage	f = 10 Hz to 100 kHz				45		μV
Dropout voltage					2		V
Bias current					4.5	6	mA
Bias current change	V_I = 9 V to 25 V,	I_O = 200 mA,	T_J = 0°C to 125°C			0.8	mA
	I_O = 5 mA to 350 mA,	T_J = 0°C to 125°C				0.5	
Short-circuit output current	V_I = 35 V				270		mA
Peak output current					0.7		A

(1) All characteristics are measured with a 0.33-μF capacitor across the input and a 0.1-μF capacitor across the output. Pulse-testing techniques maintain T_J as close to T_A as possible. Thermal effects must be taken into account separately.

Electrical Characteristics

at specified virtual junction temperature, V_I = 14 V, I_O = 350 mA, T_J = 25°C (unless otherwise noted)

PARAMETER	TEST CONDITIONS(1)			μA78M08C			UNIT
				MIN	TYP	MAX	
Output voltage	V_I = 10.5 V to 23 V,	I_O = 5 mA to 350 mA		7.7	8	8.3	V
			T_J = 0°C to 125°C	7.6		8.4	
Input voltage regulation	I_O = 200 mA	V_I = 10.5 V to 25 V			6	100	mV
		V_I = 11 V to 25 V			2	50	
Ripple rejection	V_I = 11 V to 21.5 V, f = 120 Hz	I_O = 100 mA,	T_J = 0°C to 125°C	56			dB
		I_O = 300 mA		56	80		
Output voltage regulation	I_O = 5 mA to 500 mA				25	160	mV
	I_O = 5 mA to 200 mA				10	80	
Temperature coefficient of output voltage	I_O = 5 mA,	T_J = 0°C to 125°C			–1		mV/°C
Output noise voltage	f = 10 Hz to 100 kHz				52		μV
Dropout voltage					2		V
Bias current					4.6	6	mA
Bias current change	V_I = 10.5 V to 25 V,	I_O = 200 mA,	T_J = 0°C to 125°C			0.8	mA
	I_O = 5 mA to 350 mA,	T_J = 0°C to 125°C				0.5	
Short-circuit output current	V_I = 35 V				250		mA
Peak output current					0.7		A

(1) All characteristics are measured with a 0.33-μF capacitor across the input and a 0.1-μF capacitor across the output. Pulse-testing techniques maintain T_J as close to T_A as possible. Thermal effects must be taken into account separately.

Electrical Characteristics

at specified virtual junction temperature, V_I = 16 V, I_O = 350 mA, T_J = 25°C (unless otherwise noted)

PARAMETER	TEST CONDITIONS(1)			μA78M09C			UNIT
				MIN	TYP	MAX	
Output voltage	V_I = 11.5 V to 24 V,	I_O = 5 mA to 350 mA		8.6	9	9.4	V
			T_J = 0°C to 125°C	8.5		9.5	
Input voltage regulation	I_O = 200 mA	V_I = 11.5 V to 26 V			6	100	mV
		V_I = 12 V to 26 V			2	50	
Ripple rejection	V_I = 13 V to 23 V, f = 120 Hz	I_O = 100 mA,	T_J = 0°C to 125°C	56			dB
		I_O = 300 mA		56	80		
Output voltage regulation	I_O = 5 mA to 500 mA				25	180	mV
	I_O = 5 mA to 200 mA				10	90	
Temperature coefficient of output voltage	I_O = 5 mA,	T_J = 0°C to 125°C			–1		mV/°C
Output noise voltage	f = 10 Hz to 100 kHz				58		μV
Dropout voltage					2		V
Bias current					4.6	6	mA
Bias current change	V_I = 11.5 V to 26 V,	I_O = 200 mA,	T_J = 0°C to 125°C			0.8	mA
	I_O = 5 mA to 350 mA,	T_J = 0°C to 125°C				0.5	
Short-circuit output current	V_I = 35 V				250		mA
Peak output current					0.7		A

(1) All characteristics are measured with a 0.33-μF capacitor across the input and a 0.1-μF capacitor across the output. Pulse-testing techniques maintain T_J as close to T_A as possible. Thermal effects must be taken into account separately.

Electrical Characteristics

at specified virtual junction temperature, V_I = 17 V, I_O = 350 mA, T_J = 25°C (unless otherwise noted)

PARAMETER	TEST CONDITIONS(1)			μA78M10C MIN	TYP	MAX	UNIT
Output voltage	V_I = 12.5 V to 25 V,	I_O = 5 mA to 350 mA		9.6	10	10.4	V
			T_J = 0°C to 125°C	9.5		10.5	
Input voltage regulation	I_O = 200 mA	V_I = 12.5 V to 28 V			7	100	mV
		V_I = 14 V to 28 V			2	50	
Ripple rejection	V_I = 15 V to 25 V, f = 120 Hz	I_O = 100 mA,	T_J = 0°C to 125°C	59			dB
		I_O = 300 mA		55	80		
Output voltage regulation	I_O = 5 mA to 500 mA				25	200	mV
	I_O = 5 mA to 200 mA				10	100	
Temperature coefficient of output voltage	I_O = 5 mA,	T_J = 0°C to 125°C			–1		mV/°C
Output noise voltage	f = 10 Hz to 100 kHz				64		μV
Dropout voltage					2		V
Bias current					4.7	6	mA
Bias current change	V_I = 12.5 V to 28 V,	I_O = 200 mA,	T_J = 0°C to 125°C			0.8	mA
	I_O = 5 mA to 350 mA,	T_J = 0°C to 125°C				0.5	
Short-circuit output current	V_I = 35 V				245		mA
Peak output current					0.7		A

(1) All characteristics are measured with a 0.33-μF capacitor across the input and a 0.1-μF capacitor across the output. Pulse-testing techniques maintain T_J as close to T_A as possible. Thermal effects must be taken into account separately.

Electrical Characteristics

at specified virtual junction temperature, V_I = 19 V, I_O = 350 mA, T_J = 25°C (unless otherwise noted)

PARAMETER	TEST CONDITIONS(1)			μA78M12C MIN	TYP	MAX	UNIT
Output voltage	V_I = 14.5 V to 27 V,	I_O = 5 mA to 350 mA		11.5	12	12.5	V
			T_J = 0°C to 125°C	11.4		12.6	
Input voltage regulation	I_O = 200 mA	V_I = 14.5 V to 30 V			8	100	mV
		V_I = 16 V to 30 V			2	50	
Ripple rejection	V_I = 15 V to 25 V, f = 120 Hz	I_O = 100 mA,	T_J = 0°C to 125°C	55			dB
		I_O = 300 mA		55	80		
Output voltage regulation	I_O = 5 mA to 500 mA				25	240	mV
	I_O = 5 mA to 200 mA				10	120	
Temperature coefficient of output voltage	I_O = 5 mA,	T_J = 0°C to 125°C			–1		mV/°C
Output noise voltage	f = 10 Hz to 100 kHz				75		μV
Dropout voltage					2		V
Bias current					4.8	6	mA
Bias current change	V_I = 14.5 V to 30 V,	I_O = 200 mA,	T_J = 0°C to 125°C			0.8	mA
	I_O = 5 mA to 350 mA,	T_J = 0°C to 125°C				0.5	
Short-circuit output current	V_I = 35 V				240		mA
Peak output current					0.7		A

(1) All characteristics are measured with a 0.33-μF capacitor across the input and a 0.1-μF capacitor across the output. Pulse-testing techniques maintain T_J as close to T_A as possible. Thermal effects must be taken into account separately.

The μA78M15 is obsolete and no longer supplied.

Electrical Characteristics

at specified virtual junction temperature, V_I = 23 V, I_O = 350 mA, T_J = 25°C (unless otherwise noted)

PARAMETER	TEST CONDITIONS(1)			μA78M15C MIN	μA78M15C TYP	μA78M15C MAX	UNIT
Output voltage	V_I = 17.5 V to 30 V,	I_O = 5 mA to 350 mA		14.4	15	15.6	V
			T_J = 0°C to 125°C	14.25		15.75	
Input voltage regulation	I_O = 200 mA	V_I = 17.5 V to 30 V			10	100	mV
		V_I = 20 V to 30 V			3	50	
Ripple rejection	V_I = 18.5 V to 28.5 V, f = 120 Hz	I_O = 100 mA,	T_J = 0°C to 125°C	54			dB
		I_O = 300 mA		54	70		
Output voltage regulation	I_O = 5 mA to 500 mA				25	300	mV
	I_O = 5 mA to 200 mA				10	150	
Temperature coefficient of output voltage	I_O = 5 mA,	T_J = 0°C to 125°C			–1		mV/°C
Output noise voltage	f = 10 Hz to 100 kHz				90		μV
Dropout voltage					2		V
Bias current					4.8	6	mA
Bias current change	V_I = 17.5 V to 30 V,	I_O = 200 mA,	T_J = 0°C to 125°C			0.8	mA
	I_O = 5 mA to 350 mA,	T_J = 0°C to 125°C				0.5	
Short-circuit output current	V_I = 35 V				240		mA
Peak output current					0.7		A

(1) All characteristics are measured with a 0.33-μF capacitor across the input and a 0.1-μF capacitor across the output. Pulse-testing techniques maintain T_J as close to T_A as possible. Thermal effects must be taken into account separately.

PACKAGING INFORMATION

Orderable Device	Status (1)	Package Type	Package Drawing	Pins	Package Qty	Eco Plan (2)	Lead/Ball Finish	MSL Peak Temp (3)
UA78M05CDCY	ACTIVE	SOT-223	DCY	4	80	Green (RoHS & no Sb/Br)	CU SN	Level-2-260C-1 YEAR
UA78M05CDCYG3	ACTIVE	SOT-223	DCY	4	80	Green (RoHS & no Sb/Br)	CU SN	Level-2-260C-1 YEAR
UA78M05CDCYR	ACTIVE	SOT-223	DCY	4	2500	Green (RoHS & no Sb/Br)	CU SN	Level-2-260C-1 YEAR
UA78M05CDCYRG3	ACTIVE	SOT-223	DCY	4	2500	Green (RoHS & no Sb/Br)	CU SN	Level-2-260C-1 YEAR
UA78M05CKC	NRND	TO-220	KC	3	50	Pb-Free (RoHS)	CU SN	N / A for Pkg Type
UA78M05CKCS	ACTIVE	TO-220	KCS	3	50	Pb-Free (RoHS)	CU SN	N / A for Pkg Type
UA78M05CKCSE3	ACTIVE	TO-220	KCS	3	50	Pb-Free (RoHS)	CU SN	N / A for Pkg Type
UA78M05CKTPR	NRND	PFM	KTP	2	3000	Green (RoHS & no Sb/Br)	CU SN	Level-1-260C-UNLIM
UA78M05CKTPRG3	NRND	PFM	KTP	2	3000	Green (RoHS & no Sb/Br)	CU SN	Level-1-260C-UNLIM
UA78M05CKVURG3	ACTIVE	PFM	KVU	3	2500	Green (RoHS & no Sb/Br)	CU SN	Level-3-260C-168 HR
UA78M05IDCY	ACTIVE	SOT-223	DCY	4	80	Green (RoHS & no Sb/Br)	CU SN	Level-2-260C-1 YEAR
UA78M05IDCYG3	ACTIVE	SOT-223	DCY	4	80	Green (RoHS & no Sb/Br)	CU SN	Level-2-260C-1 YEAR
UA78M05IDCYR	ACTIVE	SOT-223	DCY	4	2500	Green (RoHS & no Sb/Br)	CU SN	Level-2-260C-1 YEAR
UA78M05IDCYRG3	ACTIVE	SOT-223	DCY	4	2500	Green (RoHS & no Sb/Br)	CU SN	Level-2-260C-1 YEAR
UA78M05IKC	NRND	TO-220	KC	3	50	Pb-Free (RoHS)	CU SN	N / A for Pkg Type
UA78M05IKCE3	NRND	TO-220	KC	3	50	Pb-Free (RoHS)	CU SN	N / A for Pkg Type
UA78M05IKCS	ACTIVE	TO-220	KCS	3	50	Pb-Free (RoHS)	CU SN	N / A for Pkg Type
UA78M05IKCSE3	ACTIVE	TO-220	KCS	3	50	Pb-Free (RoHS)	CU SN	N / A for Pkg Type
UA78M05IKTPR	NRND	PFM	KTP	2	3000	Green (RoHS & no Sb/Br)	CU SN	Level-1-260C-UNLIM
UA78M05IKTPRG3	NRND	PFM	KTP	2	3000	Green (RoHS & no Sb/Br)	CU SN	Level-1-260C-UNLIM
UA78M05IKVURG3	ACTIVE	PFM	KVU	3	2500	Green (RoHS & no Sb/Br)	CU SN	Level-3-260C-168 HR
UA78M06CKC	OBSOLETE	TO-220	KC	3		TBD	Call TI	Call TI
UA78M06CKTPR	NRND	PFM	KTP	2	3000	Green (RoHS & no Sb/Br)	CU SN	Level-1-260C-UNLIM
UA78M06CKTPRG3	NRND	PFM	KTP	2	3000	Green (RoHS & no Sb/Br)	CU SN	Level-1-260C-UNLIM
UA78M06CKVURG3	ACTIVE	PFM	KVU	3	2500	Green (RoHS & no Sb/Br)	CU SN	Level-3-260C-168 HR

Orderable Device	Status [1]	Package Type	Package Drawing	Pins	Package Qty	Eco Plan [2]	Lead/Ball Finish	MSL Peak Temp [3]
UA78M08CDCY	ACTIVE	SOT-223	DCY	4	80	Green (RoHS & no Sb/Br)	CU SN	Level-2-260C-1 YEAR
UA78M08CDCYG3	ACTIVE	SOT-223	DCY	4	80	Green (RoHS & no Sb/Br)	CU SN	Level-2-260C-1 YEAR
UA78M08CDCYR	ACTIVE	SOT-223	DCY	4	2500	Green (RoHS & no Sb/Br)	CU SN	Level-2-260C-1 YEAR
UA78M08CDCYRG3	ACTIVE	SOT-223	DCY	4	2500	Green (RoHS & no Sb/Br)	CU SN	Level-2-260C-1 YEAR
UA78M08CKC	NRND	TO-220	KC	3	50	Pb-Free (RoHS)	CU SN	N / A for Pkg Type
UA78M08CKCE3	NRND	TO-220	KC	3	50	Pb-Free (RoHS)	CU SN	N / A for Pkg Type
UA78M08CKCS	ACTIVE	TO-220	KCS	3	50	Pb-Free (RoHS)	CU SN	N / A for Pkg Type
UA78M08CKCSE3	ACTIVE	TO-220	KCS	3	50	Pb-Free (RoHS)	CU SN	N / A for Pkg Type
UA78M08CKTPR	NRND	PFM	KTP	2	3000	Green (RoHS & no Sb/Br)	CU SN	Level-1-260C-UNLIM
UA78M08CKTPRG3	NRND	PFM	KTP	2	3000	TBD	Call TI	Call TI
UA78M08CKVURG3	ACTIVE	PFM	KVU	3	2500	Green (RoHS & no Sb/Br)	CU SN	Level-3-260C-168 HR
UA78M09CKC	OBSOLETE	TO-220	KC	3		TBD	Call TI	Call TI
UA78M09CKTP	OBSOLETE	PFM	KTP	2		TBD	Call TI	Call TI
UA78M09CKTPR	NRND	PFM	KTP	2	3000	Green (RoHS & no Sb/Br)	CU SN	Level-1-260C-UNLIM
UA78M09CKTPRG3	NRND	PFM	KTP	2	3000	Green (RoHS & no Sb/Br)	CU SN	Level-1-260C-UNLIM
UA78M09CKVURG3	ACTIVE	PFM	KVU	3	2500	Green (RoHS & no Sb/Br)	CU SN	Level-3-260C-168 HR
UA78M10CKC	OBSOLETE	TO-220	KC	3		TBD	Call TI	Call TI
UA78M10CKTPR	NRND	PFM	KTP	2	3000	Green (RoHS & no Sb/Br)	CU SN	Level-1-260C-UNLIM
UA78M10CKTPRG3	NRND	PFM	KTP	2	3000	Green (RoHS & no Sb/Br)	CU SN	Level-1-260C-UNLIM
UA78M10CKVURG3	ACTIVE	PFM	KVU	3	2500	Green (RoHS & no Sb/Br)	CU SN	Level-3-260C-168 HR
UA78M12CKC	NRND	TO-220	KC	3	50	Pb-Free (RoHS)	CU SN	N / A for Pkg Type
UA78M12CKCS	ACTIVE	TO-220	KCS	3	50	Pb-Free (RoHS)	CU SN	N / A for Pkg Type
UA78M12CKCSE3	ACTIVE	TO-220	KCS	3	50	Pb-Free (RoHS)	CU SN	N / A for Pkg Type
UA78M12CKTPR	NRND	PFM	KTP	2	3000	Green (RoHS & no Sb/Br)	CU SN	Level-1-260C-UNLIM
UA78M12CKTPRG3	NRND	PFM	KTP	2	3000	Green (RoHS & no Sb/Br)	CU SN	Level-1-260C-UNLIM
UA78M12CKVURG3	ACTIVE	PFM	KVU	3	2500	Green (RoHS & no Sb/Br)	CU SN	Level-3-260C-168 HR
UA78M33CDCY	ACTIVE	SOT-223	DCY	4	80	Green (RoHS & no Sb/Br)	CU SN	Level-2-260C-1 YEAR
UA78M33CDCYG3	ACTIVE	SOT-223	DCY	4	80	Green (RoHS &	CU SN	Level-2-260C-1 YEAR

Orderable Device	Status (1)	Package Type	Package Drawing	Pins	Package Qty	Eco Plan (2)	Lead/Ball Finish	MSL Peak Temp (3)
						no Sb/Br)		
UA78M33CDCYR	ACTIVE	SOT-223	DCY	4	2500	Green (RoHS & no Sb/Br)	CU SN	Level-2-260C-1 YEAR
UA78M33CDCYRG3	ACTIVE	SOT-223	DCY	4	2500	Green (RoHS & no Sb/Br)	CU SN	Level-2-260C-1 YEAR
UA78M33CKC	NRND	TO-220	KC	3	50	Pb-Free (RoHS)	CU SN	N / A for Pkg Type
UA78M33CKCE3	NRND	TO-220	KC	3	50	Pb-Free (RoHS)	CU SN	N / A for Pkg Type
UA78M33CKCS	ACTIVE	TO-220	KCS	3	50	Pb-Free (RoHS)	CU SN	N / A for Pkg Type
UA78M33CKCSE3	ACTIVE	TO-220	KCS	3	50	Pb-Free (RoHS)	CU SN	N / A for Pkg Type
UA78M33CKTPR	NRND	PFM	KTP	2	3000	Green (RoHS & no Sb/Br)	CU SN	Level-1-260C-UNLIM
UA78M33CKTPRG3	NRND	PFM	KTP	2	3000	Green (RoHS & no Sb/Br)	CU SN	Level-1-260C-UNLIM
UA78M33CKVURG3	ACTIVE	PFM	KVU	3	2500	Green (RoHS & no Sb/Br)	CU SN	Level-3-260C-168 HR

(1) The marketing status values are defined as follows:
ACTIVE: Product device recommended for new designs.
LIFEBUY: TI has announced that the device will be discontinued, and a lifetime-buy period is in effect.
NRND: Not recommended for new designs. Device is in production to support existing customers, but TI does not recommend using this part in a new design.
PREVIEW: Device has been announced but is not in production. Samples may or may not be available.
OBSOLETE: TI has discontinued the production of the device.

(2) Eco Plan - The planned eco-friendly classification: Pb-Free (RoHS), Pb-Free (RoHS Exempt), or Green (RoHS & no Sb/Br) - please check http://www.ti.com/productcontent for the latest availability information and additional product content details.
TBD: The Pb-Free/Green conversion plan has not been defined.
Pb-Free (RoHS): TI's terms "Lead-Free" or "Pb-Free" mean semiconductor products that are compatible with the current RoHS requirements for all 6 substances, including the requirement that lead not exceed 0.1% by weight in homogeneous materials. Where designed to be soldered at high temperatures, TI Pb-Free products are suitable for use in specified lead-free processes.
Pb-Free (RoHS Exempt): This component has a RoHS exemption for either 1) lead-based flip-chip solder bumps used between the die and package, or 2) lead-based die adhesive used between the die and leadframe. The component is otherwise considered Pb-Free (RoHS compatible) as defined above.
Green (RoHS & no Sb/Br): TI defines "Green" to mean Pb-Free (RoHS compatible), and free of Bromine (Br) and Antimony (Sb) based flame retardants (Br or Sb do not exceed 0.1% by weight in homogeneous material)

(3) MSL, Peak Temp. -- The Moisture Sensitivity Level rating according to the JEDEC industry standard classifications, and peak solder temperature.

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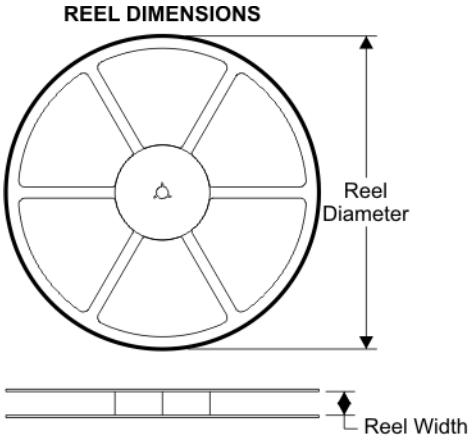
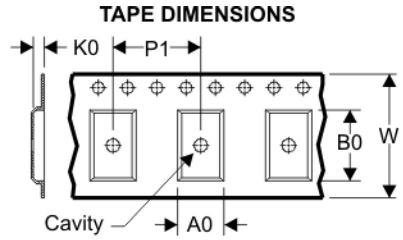
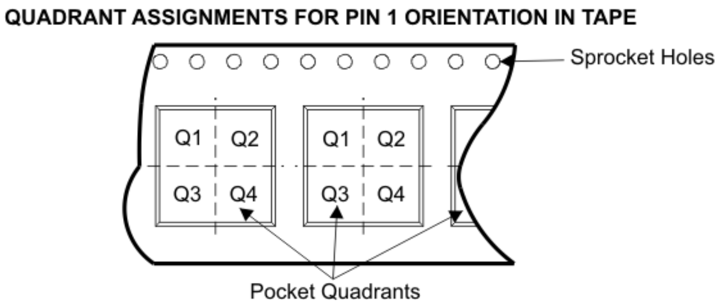
TAPE AND REEL BOX INFORMATION





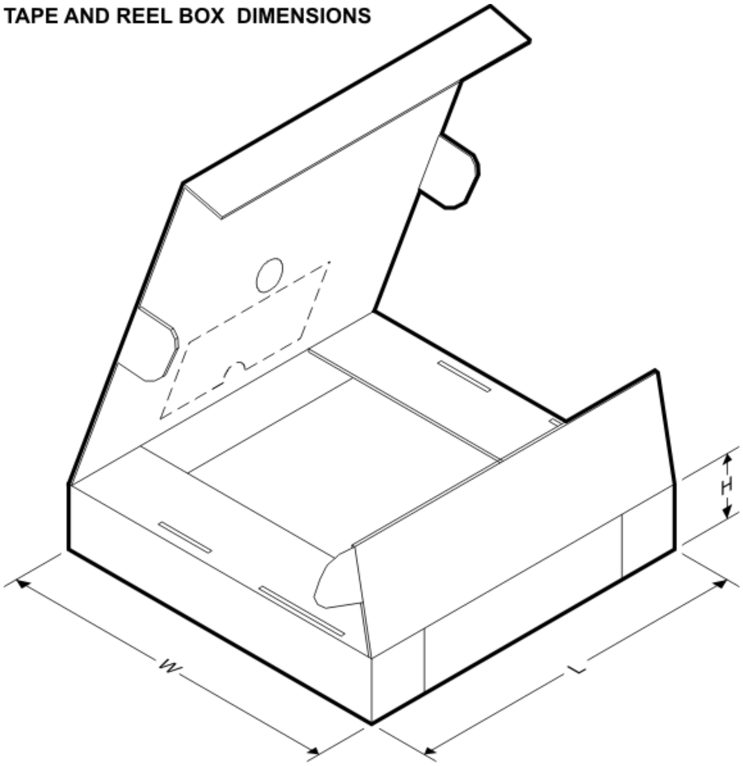
A0	Dimension designed to accommodate the component width
B0	Dimension designed to accommodate the component length
K0	Dimension designed to accommodate the component thickness
W	Overall width of the carrier tape
P1	Pitch between successive cavity centers



Device	Package	Pins	Site	Reel Diameter (mm)	Reel Width (mm)	A0 (mm)	B0 (mm)	K0 (mm)	P1 (mm)	W (mm)	Pin1 Quadrant
UA78M05CKVURG3	KVU	3	SITE 45	330	16	6.9	10.5	2.7	8	16	Q2
UA78M05IKVURG3	KVU	3	SITE 45	330	16	6.9	10.5	2.7	8	16	Q2
UA78M06CKVURG3	KVU	3	SITE 45	330	16	6.9	10.5	2.7	8	16	Q2
UA78M08CKVURG3	KVU	3	SITE 45	330	16	6.9	10.5	2.7	8	16	Q2
UA78M09CKVURG3	KVU	3	SITE 45	330	16	6.9	10.5	2.7	8	16	Q2
UA78M10CKVURG3	KVU	3	SITE 45	330	16	6.9	10.5	2.7	8	16	Q2
UA78M12CKVURG3	KVU	3	SITE 45	330	16	6.9	10.5	2.7	8	16	Q2
UA78M33CKVURG3	KVU	3	SITE 45	330	16	6.9	10.5	2.7	8	16	Q2

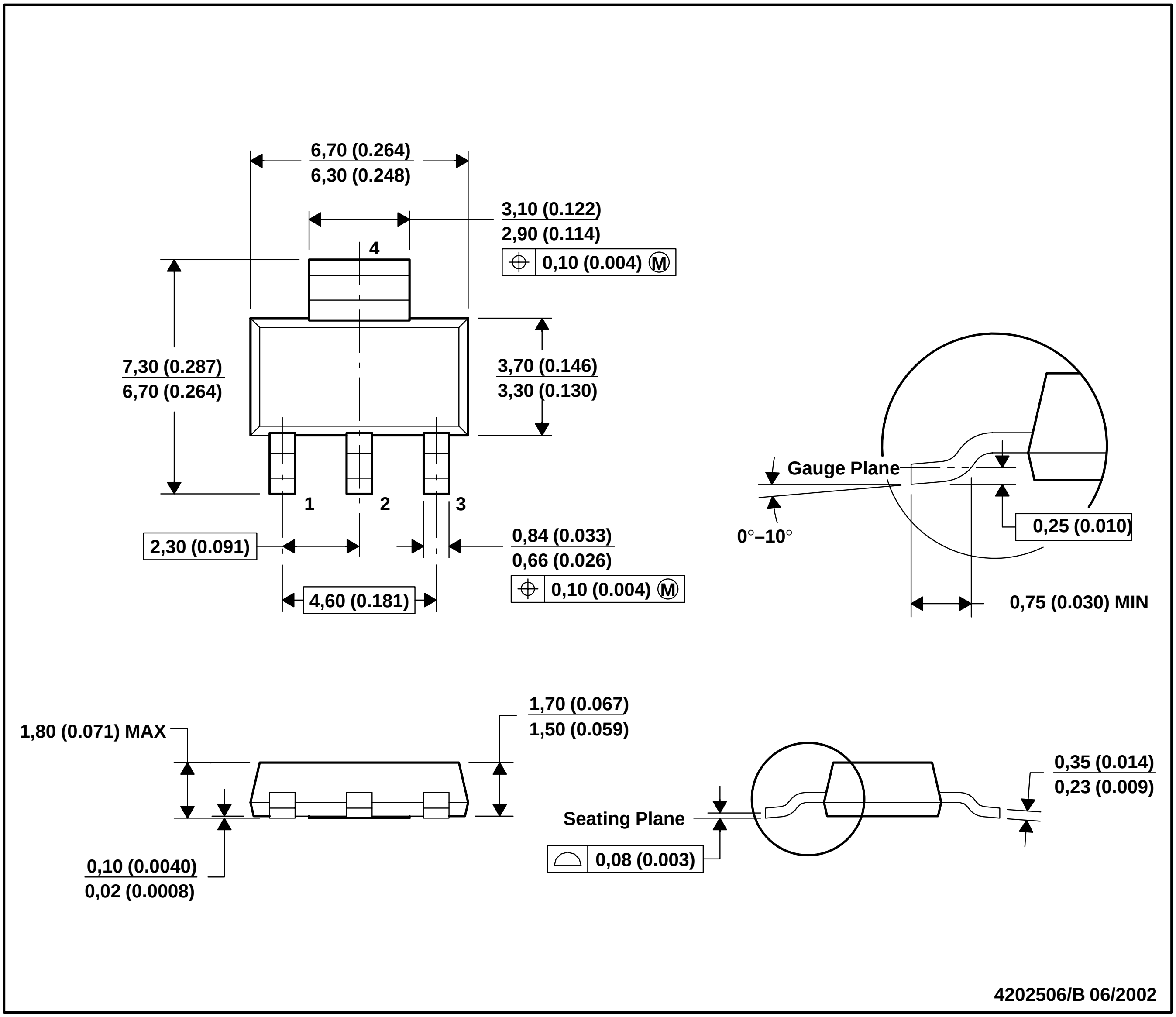
PACKAGE MATERIALS INFORMATION

TAPE AND REEL BOX DIMENSIONS



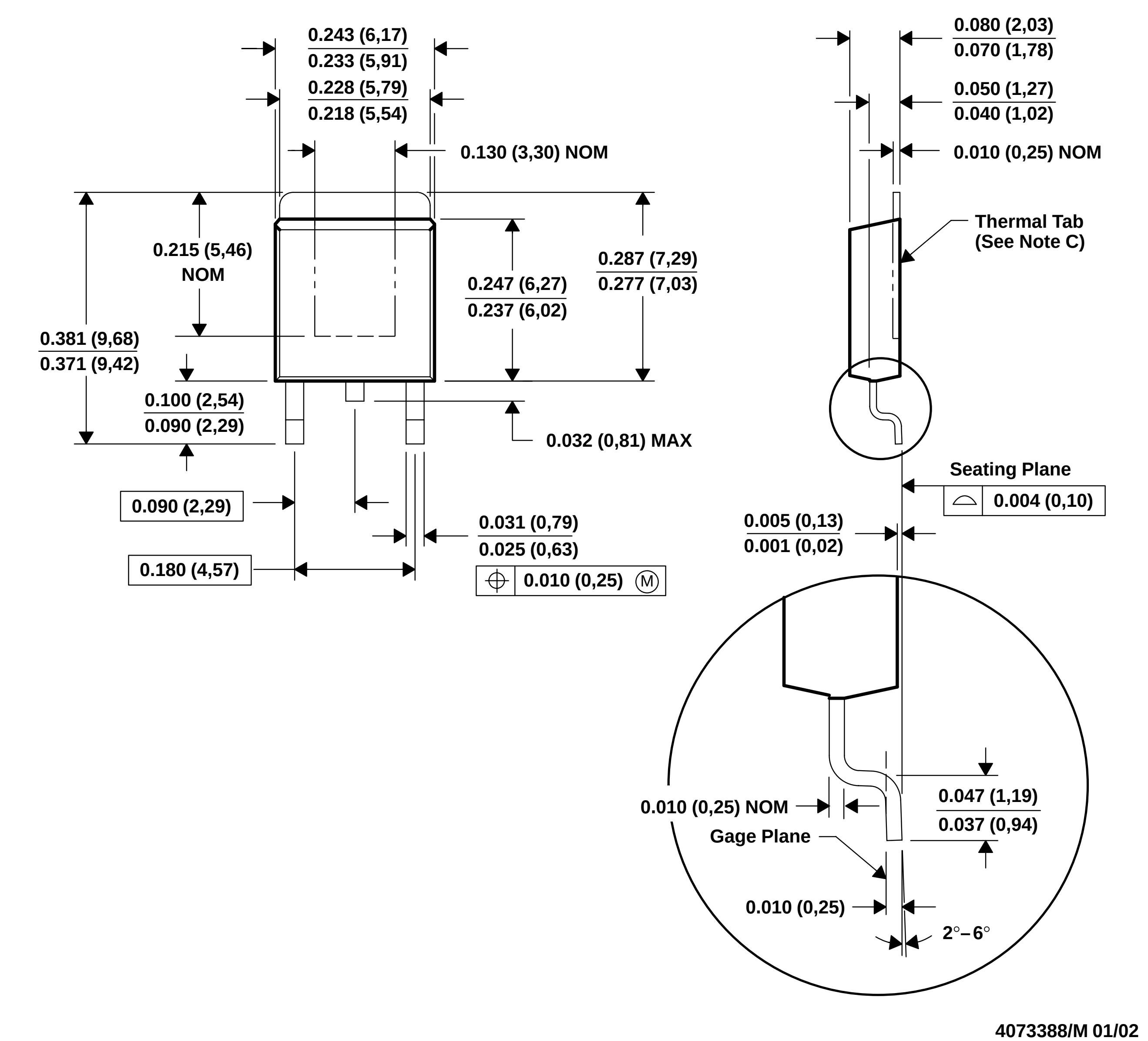
Device	Package	Pins	Site	Length (mm)	Width (mm)	Height (mm)
UA78M05CKVURG3	KVU	3	SITE 45	340.0	340.0	38.0
UA78M05IKVURG3	KVU	3	SITE 45	340.0	340.0	38.0
UA78M06CKVURG3	KVU	3	SITE 45	340.0	340.0	38.0
UA78M08CKVURG3	KVU	3	SITE 45	340.0	340.0	38.0
UA78M09CKVURG3	KVU	3	SITE 45	340.0	340.0	38.0
UA78M10CKVURG3	KVU	3	SITE 45	340.0	340.0	38.0
UA78M12CKVURG3	KVU	3	SITE 45	340.0	340.0	38.0
UA78M33CKVURG3	KVU	3	SITE 45	340.0	340.0	38.0

DCY (R-PDSO-G4) **PLASTIC SMALL-OUTLINE**



NOTES: A. All linear dimensions are in millimeters (inches).
B. This drawing is subject to change without notice.
C. Body dimensions do not include mold flash or protrusion.
D. Falls within JEDEC TO-261 Variation AA.

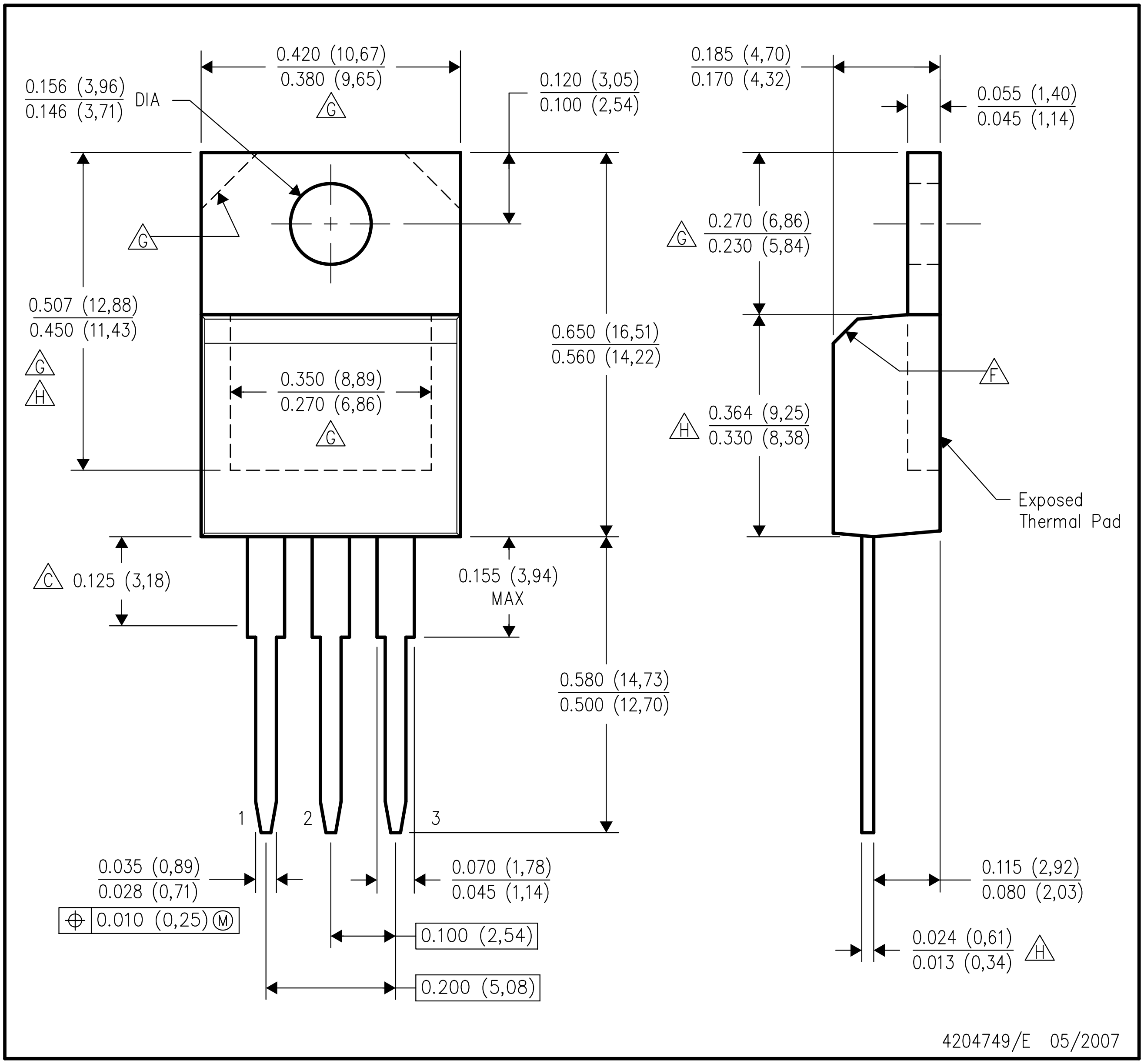
KTP (R-PSFM-G2) **PowerFLEX™ PLASTIC FLANGE-MOUNT PACKAGE**



NOTES:
- A. All linear dimensions are in inches (millimeters).
- B. This drawing is subject to change without notice.
- C. The center lead is in electrical contact with the thermal tab.
- D. Dimensions do not include mold protrusions, not to exceed 0.006 (0,15).
- E. Falls within JEDEC TO-252 variation AC.

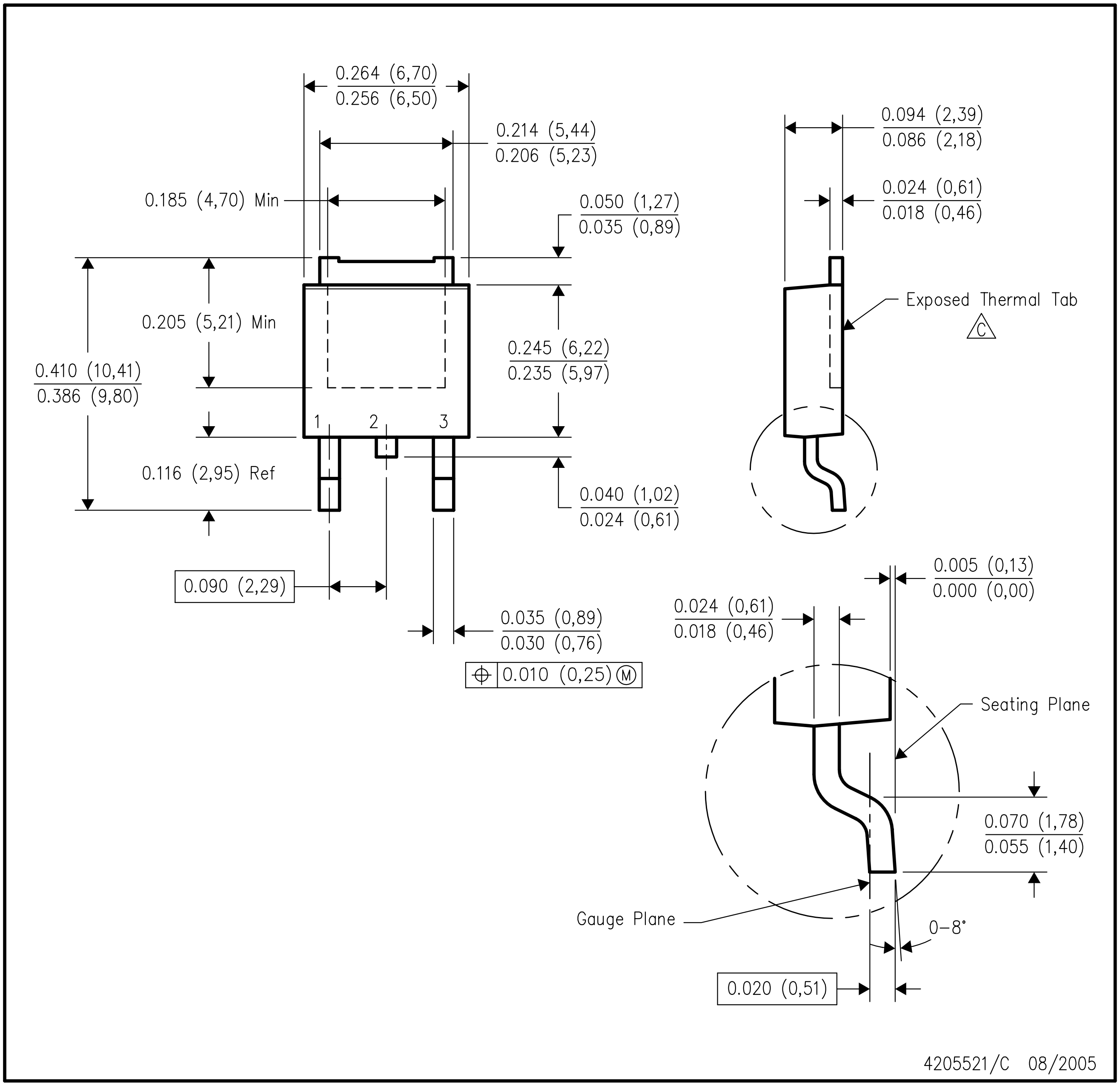
PowerFLEX is a trademark of Texas Instruments.

KCS (R–PSFM–T3) PLASTIC FLANGE–MOUNT PACKAGE



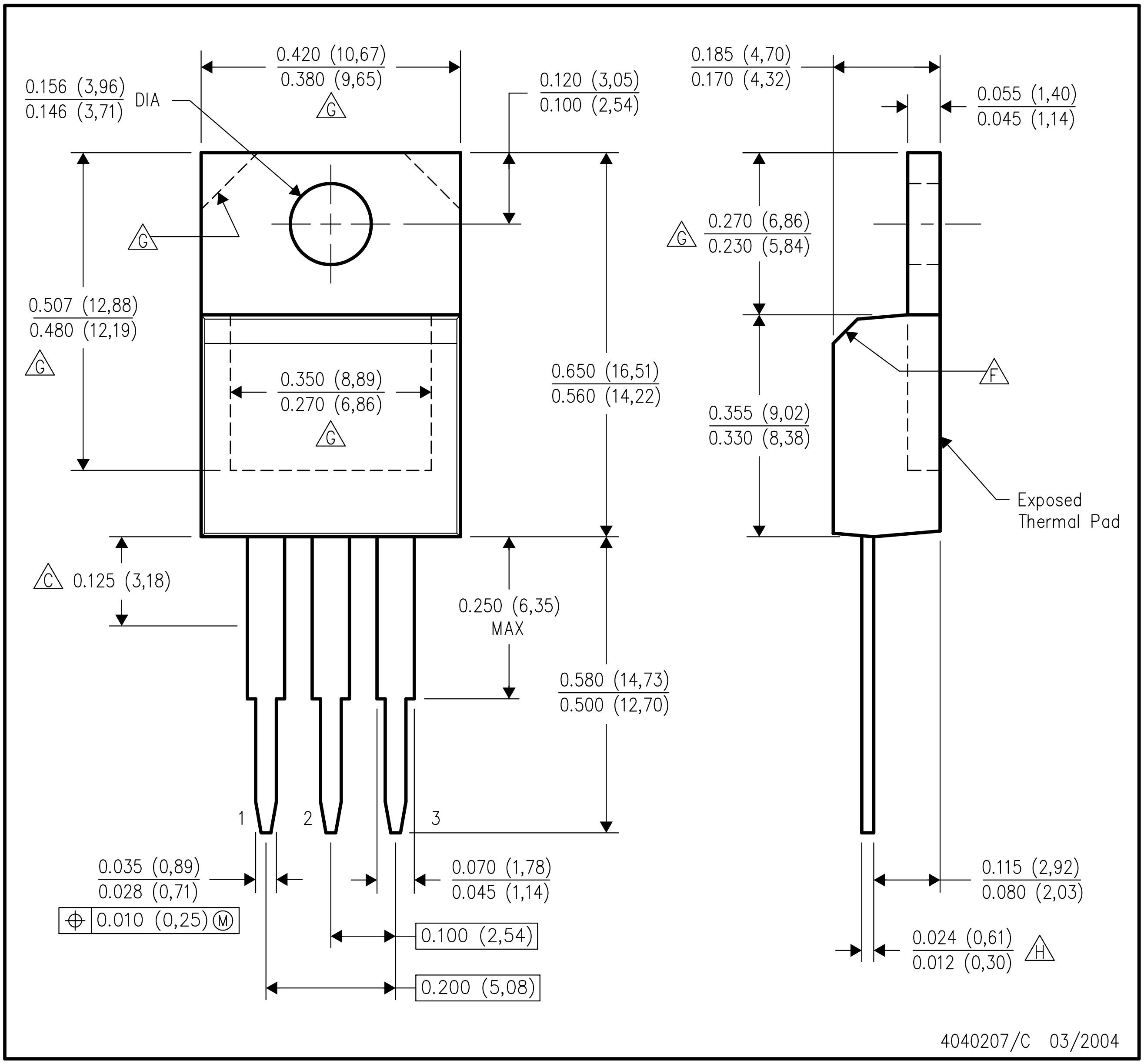
NOTES:
- A. All linear dimensions are in inches (millimeters).
- B. This drawing is subject to change without notice.
- C. Lead dimensions are not controlled within this area.
- D. All lead dimensions apply before solder dip.
- E. The center lead is in electrical contact with the mounting tab.
- F. The chamfer is optional.
- G. Thermal pad contour optional within these dimensions.
- H. Falls within JEDEC TO–220 variation AB, except minimum lead thickness, minimum exposed pad length, and maximum body length.

KVU (R-PSFM-G3) PLASTIC FLANGE-MOUNT PACKAGE



NOTES:
- A. All linear dimensions are in inches (millimeters).
- B. This drawing is subject to change without notice.
- C. The center lead is in electrical contact with the exposed thermal tab.
- D. Body Dimensions do not include mold flash or protrusions. Mold flash and protrusion shall not exceed 0.006 (0,15) per side.
- E. Falls within JEDEC TO–252 variation AA.

KC (R–PSFM–T3) PLASTIC FLANGE–MOUNT PACKAGE



NOTES:
- A. All linear dimensions are in inches (millimeters).
- B. This drawing is subject to change without notice.
- C. Lead dimensions are not controlled within this area.
- D. All lead dimensions apply before solder dip.
- E. The center lead is in electrical contact with the mounting tab.
- F. The chamfer is optional.
- G. Thermal pad contour optional within these dimensions.
- H. Falls within JEDEC TO–220 variation AB, except minimum lead thickness.

Following are URLs where you can obtain information on other Texas Instruments products and application solutions:

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