

10Amp. MOS BARRIER RECTIFIER

SKM1045UCTE3

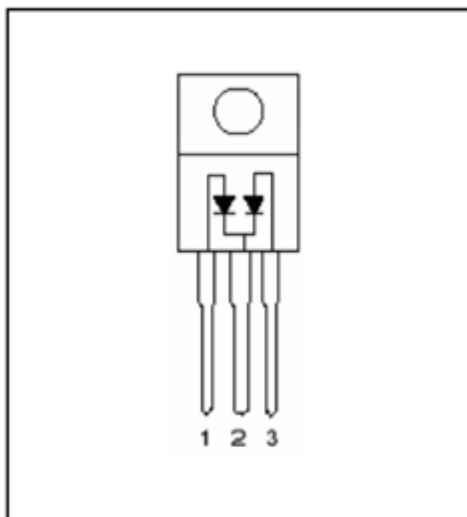
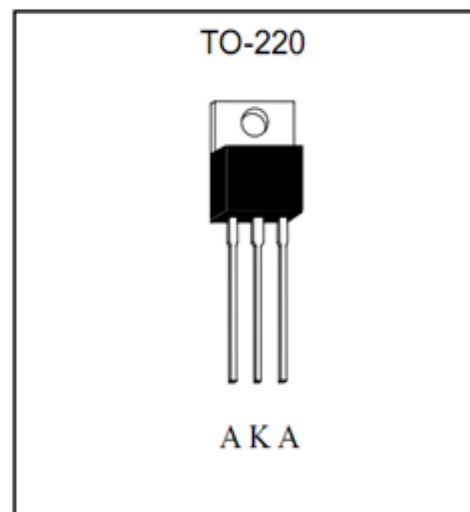
$I_{F(AV)}$	2 x 5A
V_{RRM}	45V
$V_{F(TYP.)}$	0.43V
T_j	150°C

Features

- 150°C operating junction temperature
- Softest, fast switching capability
- Reduced ultra-low forward voltage drop (VF) ; better efficiency and cooler operation.
- Lead-Free Finish; RoHS Compliant
- Halogen and Antimony Free. “Green” Device
- MCD technology provides a superior avalanche capability than schottky diodes

Mechanical Data

- Case: JEDEC TO-220AB molded plastic
- Weight: 2.2 grams approximately
- Terminals: Pure tin plated, lead-free, solderable per MIL-STD-750 method 2026
- Epoxy: UL 94V-0 rate flame retardant
- Polarity: As marked.

Equivalent Circuit

Outline


**Maximum Ratings and Electrical Characteristics**

(Rating at 25°C ambient temperature unless otherwise specified. Single phase, half wave, 60Hz, resistive or inductive load. For capacitive load, derate current by 20%.)

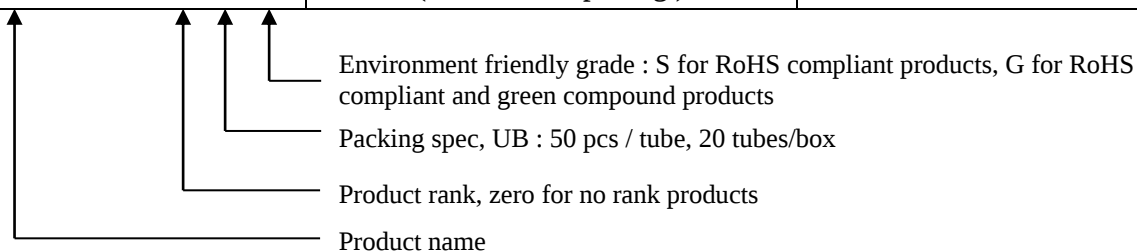
Parameter	Symbol	Min.	Typ.	Max.	Units
Maximum DC blocking voltage	V _{DC}			45	V
Maximum Recurrent peak reverse voltage	V _{RRM}			45	V
Maximum RMS voltage	V _{RMS}			32	V
Maximum instantaneous forward voltage at I _F =5A per diode	V _F	T _C =25°C		0.43	V
		T _C =125°C		0.38	
Reverse current per diode	I _R	V _R =45 V, T _C =25°C		60	μA
		V _R =45 V, T _C =125°C		10	mA
Maximum Average forward rectified current per device	I _{F(AV)}			10	A
Maximum Average forward rectified current per diode	I _{F(AV)}			5	A
Non-repetitive peak forward surge current @ 8.3ms single half sine wave superimposed on rated load (JEDEC method) per diode	I _{FSM}			120	A
Peak Repetitive Reverse Surge Current (2uS-1Khz)	I _{RRM}			2	A
Isolation voltage	V _{AC}	1500			V
Maximum Rate of Voltage Change (at Rated V _R)	dv/dt			10000	V/uS
Storage temperature range	T _{stg}	-55		150	°C
Operating junction temperature range	T _J	-55		150	°C

Thermal Data

Parameter	Symbol	Value	Unit
Typical Thermal Resistance, Junction-to-case	R _{th,j-c}	2	°C/W
Typical Thermal Resistance, Junction-to-ambient	R _{th,j-a}	60	°C/W

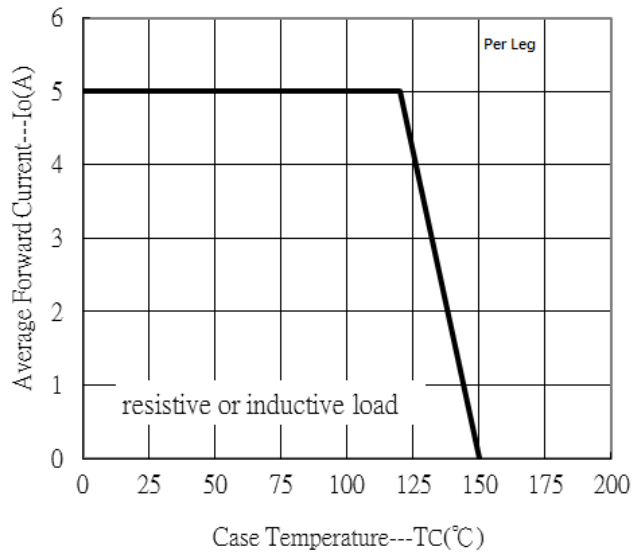
Ordering Information

Device	Package	Shipping
SKM1045UCTE3 -0-UB-S	TO-220 (Pb-free lead plating)	50 pcs/tube, 20tubes/box, 4boxes/carton

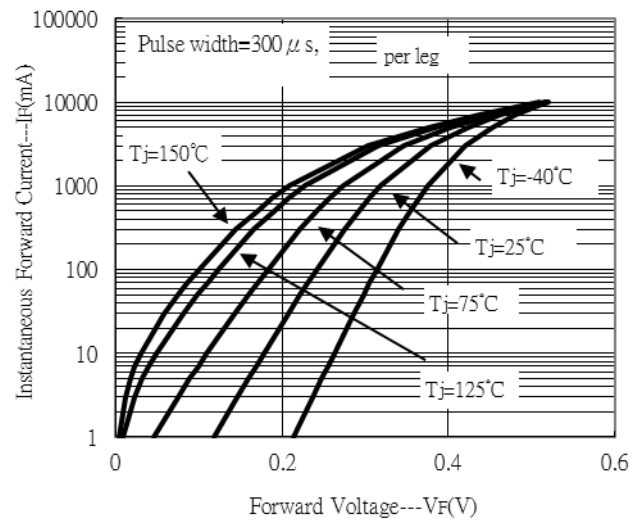


Typical Characteristics

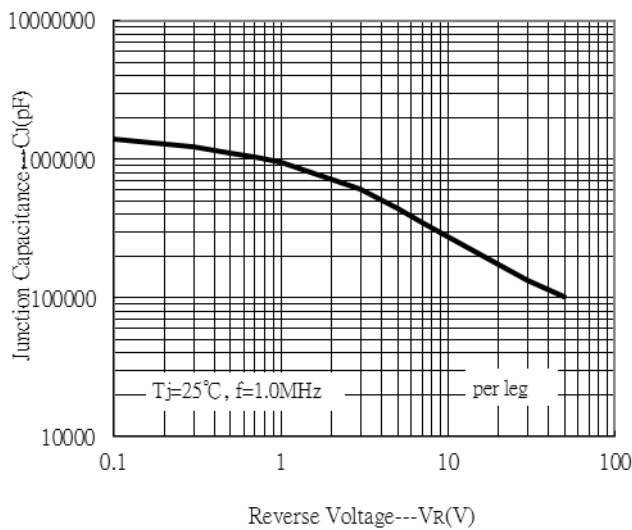
Forward Current Derating Curve



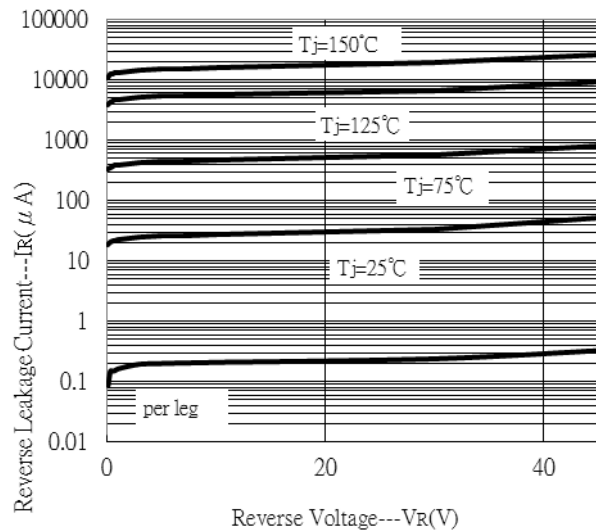
Forward Current vs Forward Voltage



Junction Capacitance vs Reverse Voltage



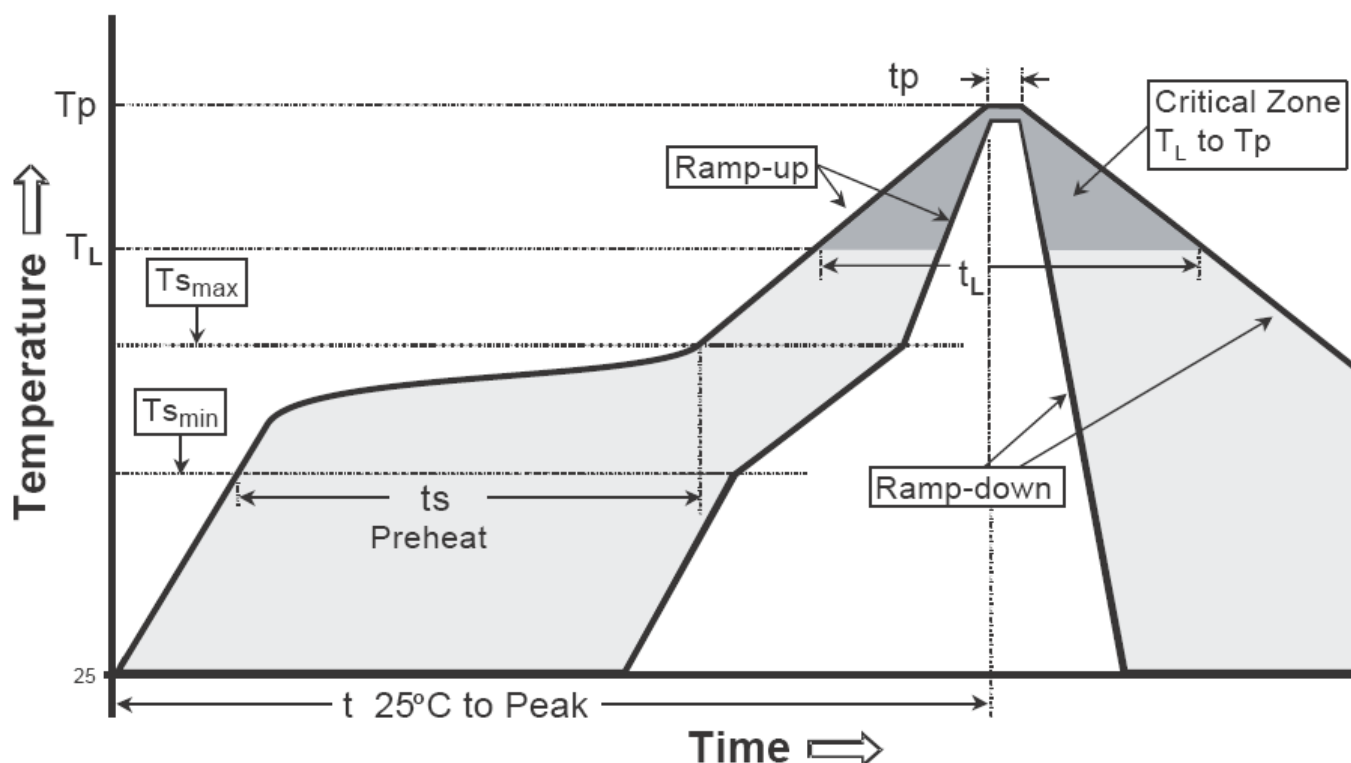
Reverse Leakage Current vs Reverse Voltage



Recommended wave soldering condition

Product	Peak Temperature	Soldering Time
Pb-free devices	260 +0/-5 °C	5 +1/-1 seconds

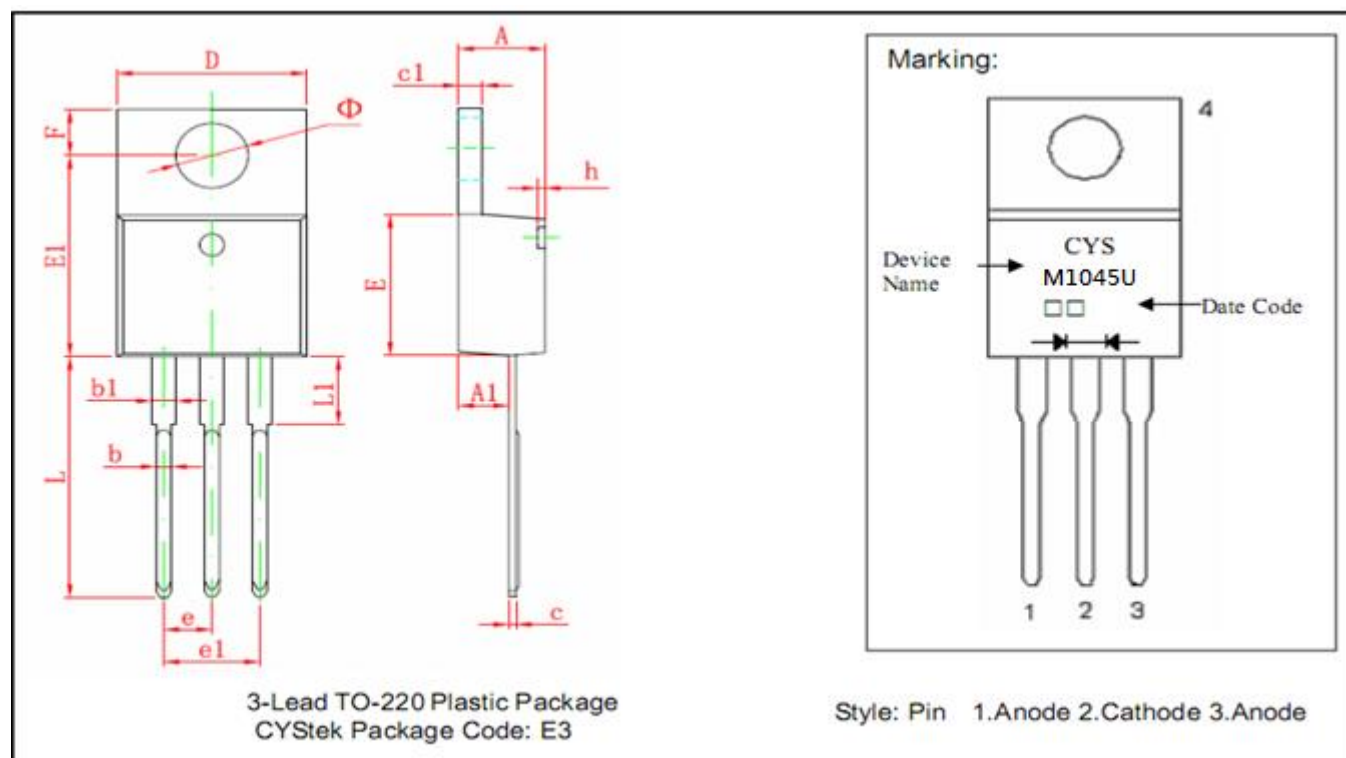
Recommended temperature profile for IR reflow



Profile feature	Sn-Pb eutectic Assembly	Pb-free Assembly
Average ramp-up rate (Tsmax to Tp)	3°C/second max.	3°C/second max.
Preheat		
-Temperature Min(Ts min)	100°C	150°C
-Temperature Max(Ts max)	150°C	200°C
-Time(ts min to ts max)	60-120 seconds	60-180 seconds
Time maintained above:		
-Temperature (Tl)	183°C	217°C
- Time (tL)	60-150 seconds	60-150 seconds
Peak Temperature(Tp)	240 +0/-5 °C	260 +0/-5 °C
Time within 5°C of actual peak temperature(tp)	10-30 seconds	20-40 seconds
Ramp down rate	6°C/second max.	6°C/second max.
Time 25 °C to peak temperature	6 minutes max.	8 minutes max.

Note : All temperatures refer to topside of the package, measured on the package body surface.

TO-220 Dimension



*: Typical

DIM	Millimeters		Inches		DIM	Millimeters		Inches	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	4.470	4.670	0.176	0.184	E1	12.060	12.460	0.475	0.491
A1	2.520	2.820	0.099	0.111	e	2.540*		0.100*	
b	0.710	0.910	0.028	0.036	e1	4.980	5.180	0.196	0.204
b1	1.170	1.370	0.046	0.054	F	2.590	2.890	0.102	0.114
c	0.310	0.530	0.012	0.021	h	0.000	0.300	0.000	0.012
c1	1.170	1.370	0.046	0.054	L	13.400	13.800	0.528	0.543
D	10.010	10.310	0.394	0.406	L1	3.560	3.960	0.140	0.156
E	8.500	8.900	0.335	0.350	Φ	3.735	3.935	0.147	0.155

Notes: 1.Controlling dimension: millimeters.

2.Maximum lead thickness includes lead finish thickness, and minimum lead thickness is the minimum thickness of base material.

3.If there is any question with packing specification or packing method, please contact your local CYStek sales office.

Material:

- Lead: Pure tin plated.
- Mold Compound: Epoxy resin family, flammability solid burning class: UL94V-0.

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