15Amp. MOS BARRIER RECTIFIER

SKM1560USP

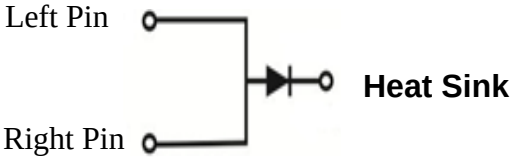
$I_{F(AV)}$	15A
V_{RRM}	60V
V_F at 125℃	0.5V
Tj	150°C

Features

- 150℃ 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

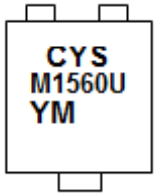
- Case: TO-277 molded plastic
- Mounting Position: Any
- Weight: 0.093 grams (approximate)
- Terminals: Pure tin plated, solderable per JESD22-B102
- Epoxy: UL 94V-0 rate flame retardant
- Polarity : As marked.



Ordering Information

Device	Package	Shipping
SKM1560USP	TO-277 (RoHS compliant package)	5000/Tape & Reel

Marking Information



CYS= Manufacturers' Code Marking

M1560US = Product Type Marking Code

Y M = Date Code Marking

Y = Last One Digits of Year (ex: 4 for 2014)

M = Month code (01 - 12)

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}			60	V
Maximum Recurrent peak reverse voltage		V_{RRM}			60	V
Maximum RMS voltage		V_{RMS}			43	V
Maximum instantaneous forward voltage at I_F=15A	T_C=25°C	V_F		0.52	0.56	V
	T_C=125°C			0.5	0.54	
Maximum instantaneous reverse current at	V_R=60 V, T_C=25°C	I_R		80	500	μA
	V_R=60 V, T_C=125°C			30	100	mA
Maximum Average forward rectified current @ T_C=100°C		$I_{F(AV)}$			15	A
Non-repetitive peak forward surge current @ 8.3ms single half sine wave superimposed on rated load (JEDEC method)		I_{FSM}			280	A
Peak Repetitive Reverse Surge Current (2uS-1Khz)		I_{RRM}			2	A
Maximum Rate of Voltage Change (at Rated VR)		dv/dt			10000	V/uS
Storage temperature range		Tstg	-55		150	°C
Operating junction temperature range		T_J	-55		150	°C

Thermal Data

Parameter	Symbol	Value	Unit
Maximum Thermal Resistance, Junction-to-ambient(1)	$R_{th,j-a}$	73	°C/W
Maximum Thermal Resistance, Junction-to-ambient(2)	$R_{th,j-a}$	31	°C/W

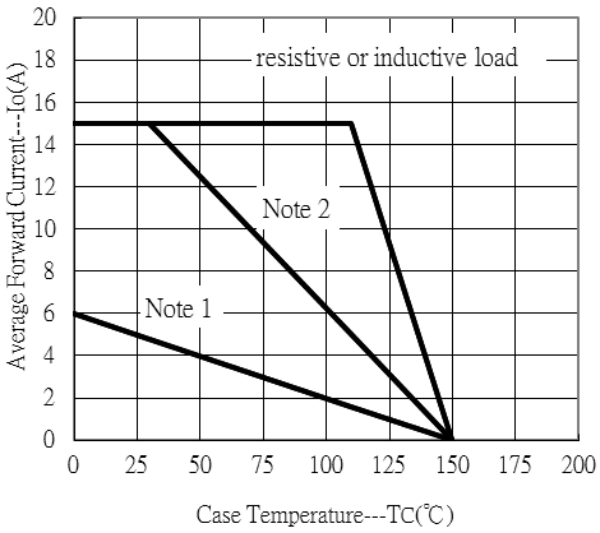
Note

1. FR-4 PCB, 2oz. Copper. Minimum recommended pad layout.

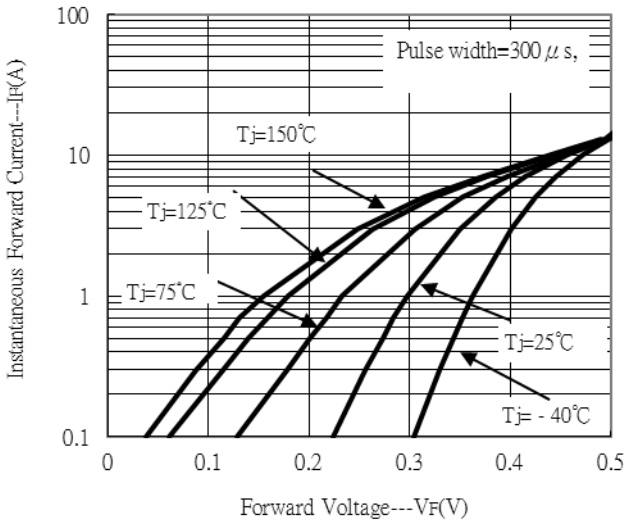
2. Polymide PCB, 2oz. Copper. Cathode pad dimensions 18.8mm x 14.4mm. Anode pad dimensions 5.6mm x 14.4mm

Typical Characteristics

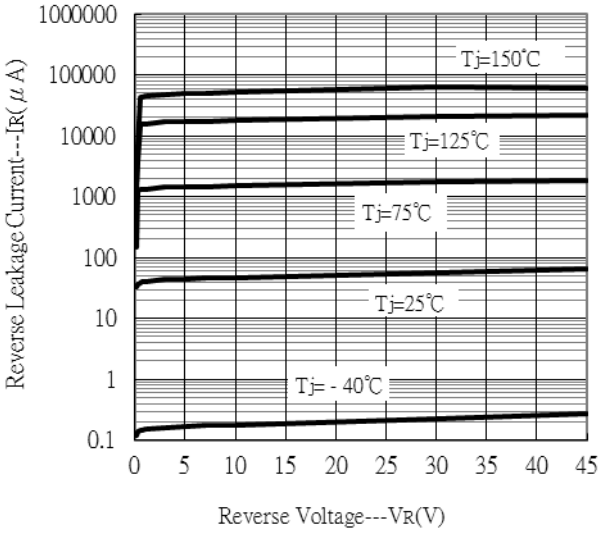
Forward Current Derating Curve



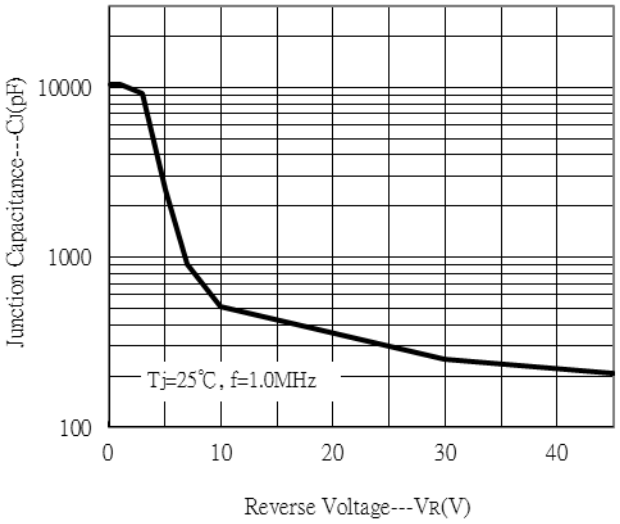
Forward Current vs Forward Voltage



Reverse Leakage Current vs Reverse Voltage



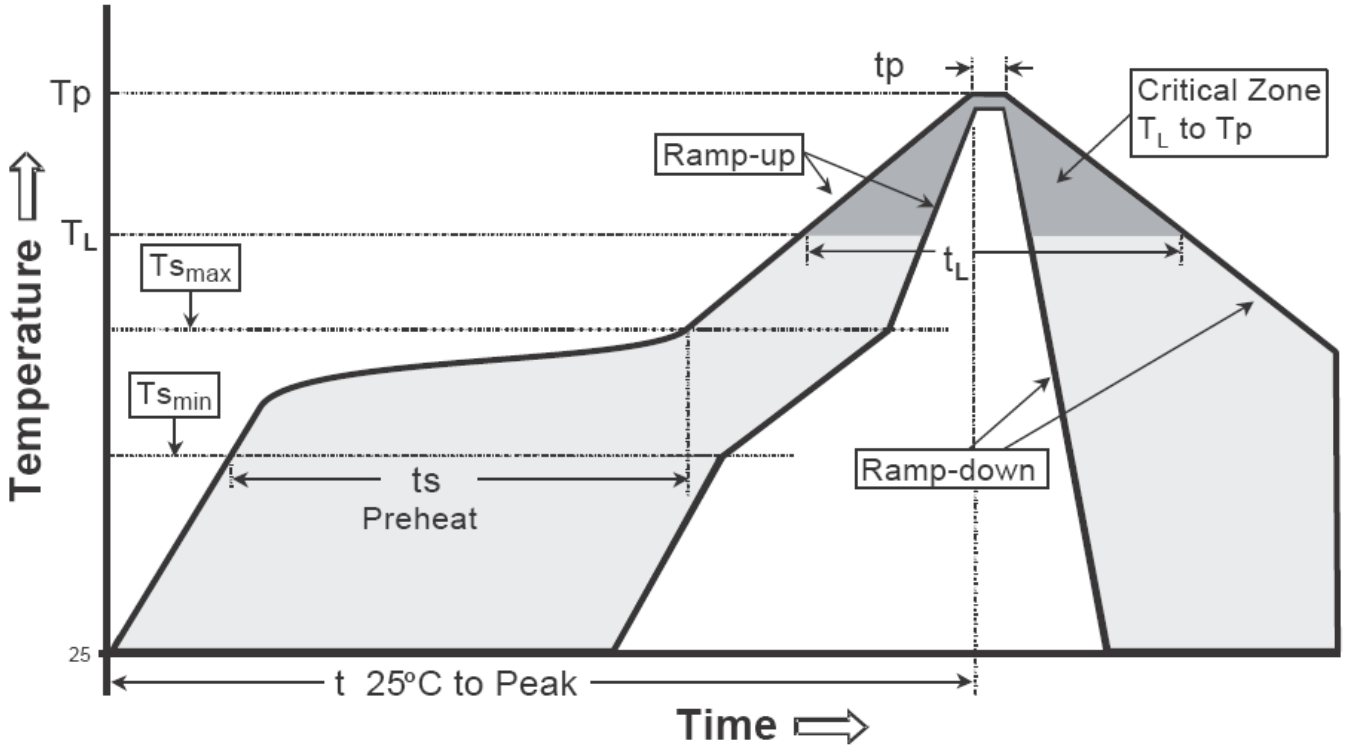
Junction Capacitance vs Reverse Voltage



Recommended wave soldering condition

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

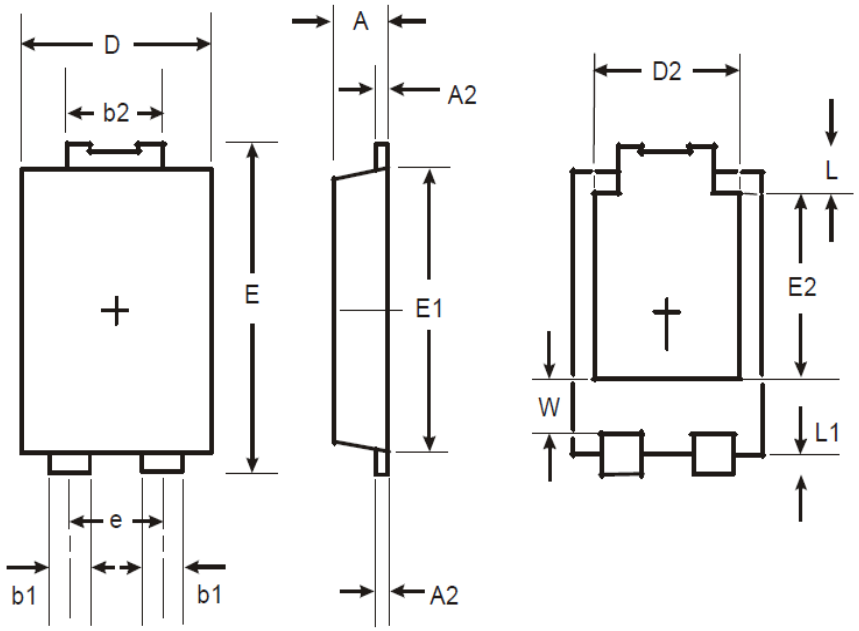
Recommended temperature profile for IR reflow



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) −Temperature Max(Ts max) −Time(ts min to ts max)	 100°C 150°C 60-120 seconds	 150°C 200°C 60-180 seconds
Time maintained above: −Temperature (TL) − Time (tL)	 183°C 60-150 seconds	 217°C 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.

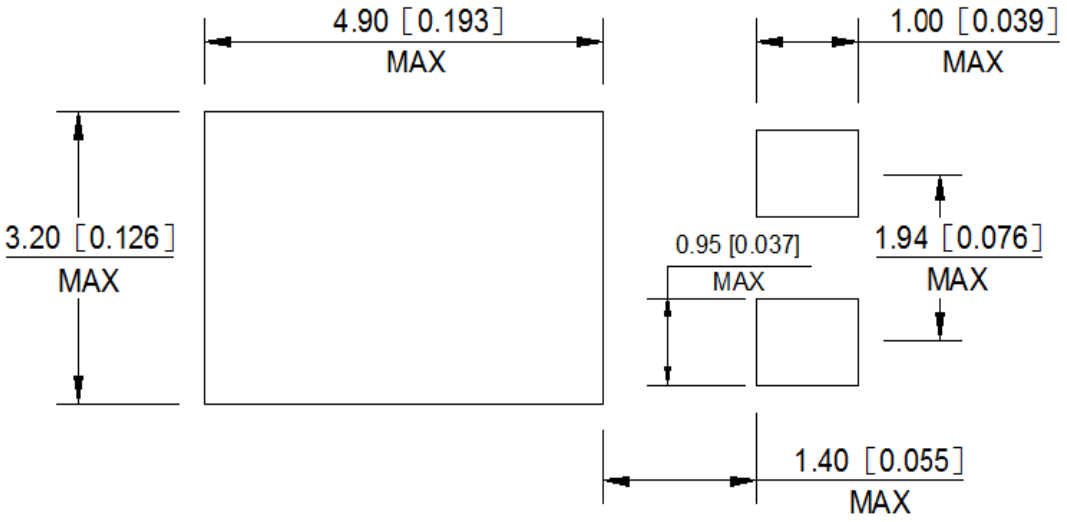
Note : All temperatures refer to topside of the package, measured on the package body surface.

TO-277 Dimension

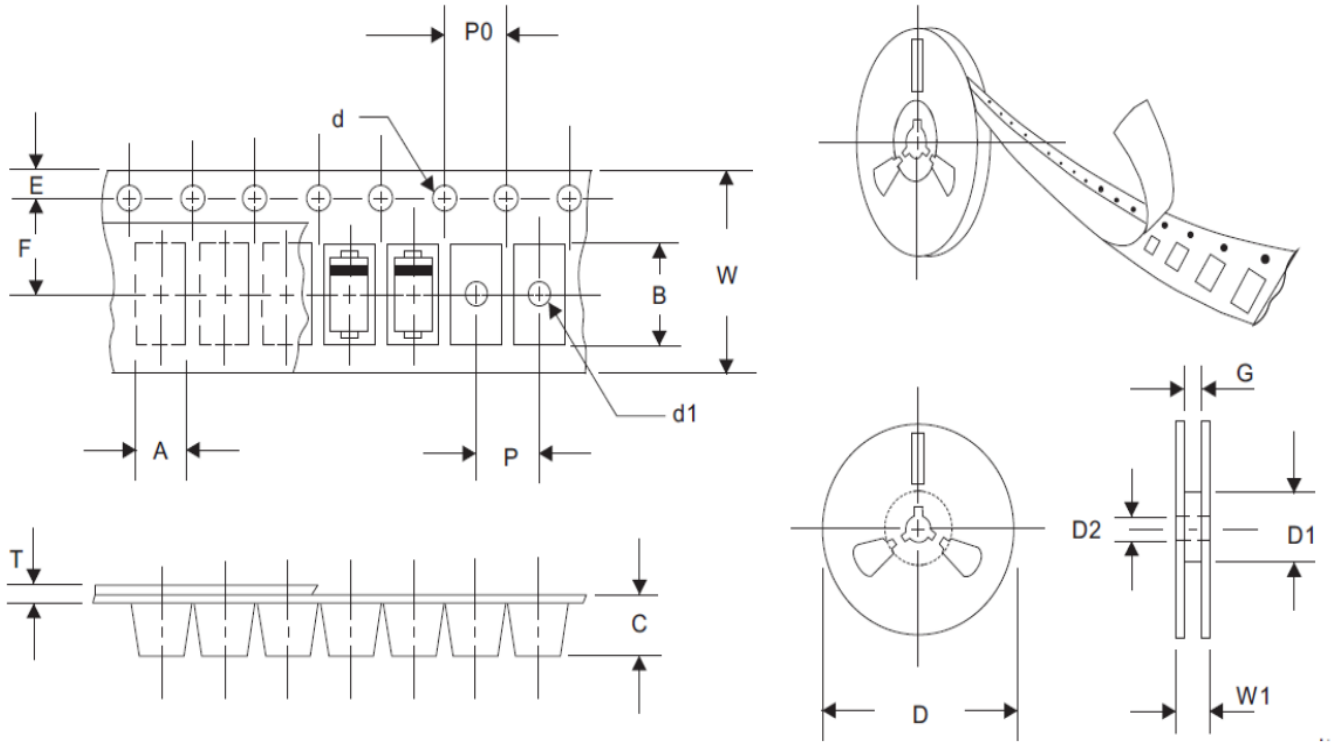


TO277		
Dim	Min	Max
A	0.95	1.25
A2	0.2	0.3
b1	0.85	0.95
b2	1.7	1.9
D	3.88	4.08
D2	2.9	3.2
E	6.3	6.7
e	1.74	1.94
E1	5.28	5.48
E2	3.4	3.7
L	0.7	1
L1	0.5	0.75
W	1.1	1.4
All Dimensions in mm		

Mounting Pad Layout



Packing Information



W	A	B	C	d1	d	E	F	P	P0	T	D	D1	D2	G	W1
16	4.38	6.9	1.4	1.5	1.5	1.75	7.5	8	4	0.34	330	100	13	16	20