

15Amp. MOS BARRIER RECTIFIER

SKM1560USP

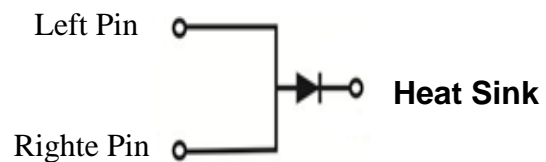
| | |
|----------------|-------|
| $I_{F(AV)}$ | 15A |
| V_{RRM} | 60V |
| V_F at 125°C | 0.5V |
| T_j | 150°C |

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

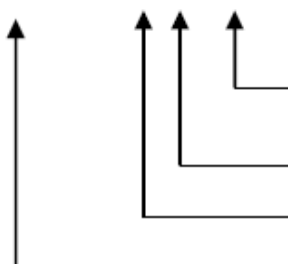
Mechanical Data

- Case: 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-0-TD-G | TO-277 (RoHS compliant package) | 5000/Tape & Reel |



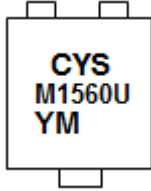
Environment friendly grade : S for RoHS compliant products, G for RoHS compliant and green compound products

Packing spec, T4 : 7500 pcs / tape & reel, 13" reel

Product rank, zero for no rank products

Product name

Marking Information



CYS= Manufacturers' Code Marking
 M1560U = Product Type Marking Code
 Y M = Date Code Marking
 Y = Last One Digits of Year (ex: 4 for 2014)
 M = Month code (1 ~ 9、10→A、11→B、12→C)

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 | V _F | T _C =25°C | 0.52 | 0.56 | v |
| | | T _C =125°C | 0.5 | 0.54 | |
| Maximum instantaneous reverse current at | I _R | V _R =60 V, T _C =25°C | 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 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

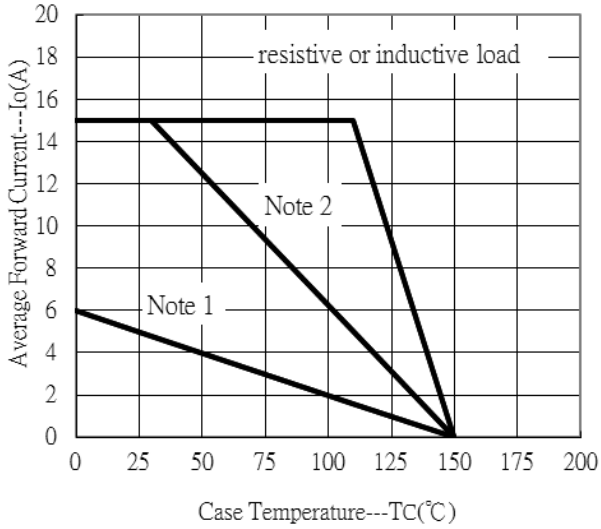
| Parameter | Symbol | Value | Unit |
|--|---------------------|-------|------|
| Maximum Thermal Resistance, Junction-to-ambient(1) | R _{th,j-a} | 73 | °C/W |
| Maximum Thermal Resistance, Junction-to-ambient(2) | R _{th,j-a} | 31 | °C/W |

Note

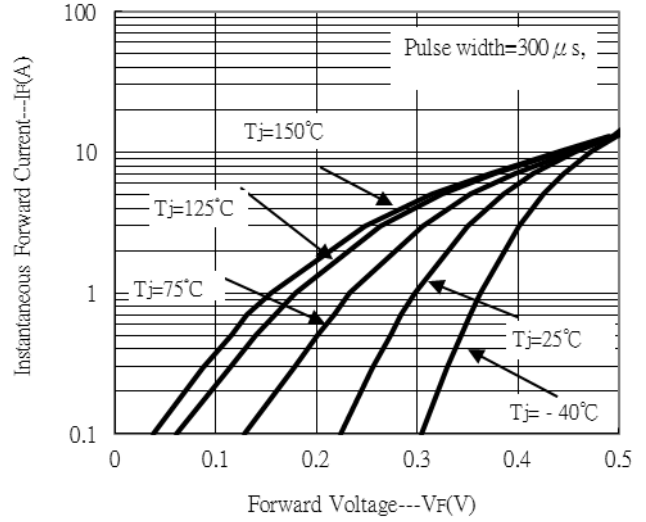
- FR-4 PCB, 2oz. Copper. Minimum recommended pad layout.
- Polyimide PCB, 2oz. Copper. Cathode pad dimensions 18.8mm x 14.4mm. Anode pad dimensions 5.6mm x 14.4mm

Typical Characteristics

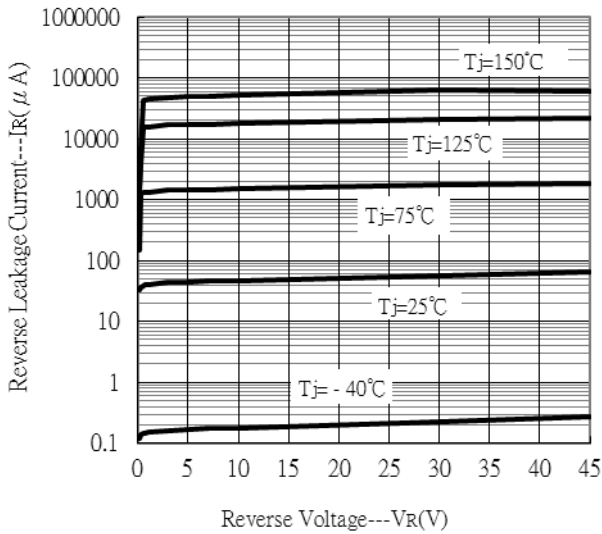
Forward Current Derating Curve



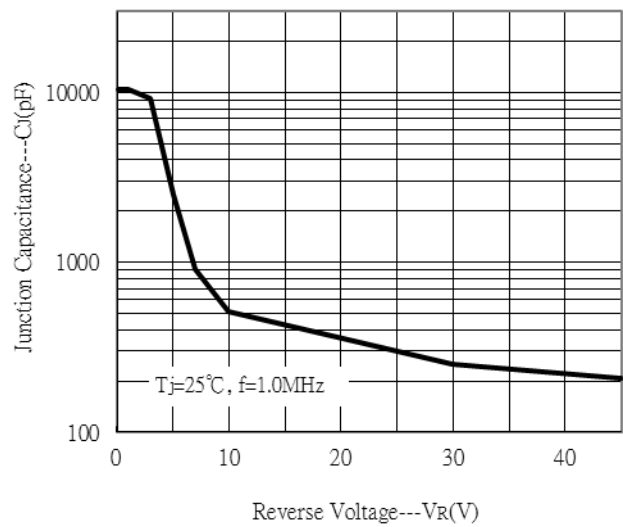
Forward Current vs Forward Voltage



Reverse Leakage Current vs Reverse Voltage



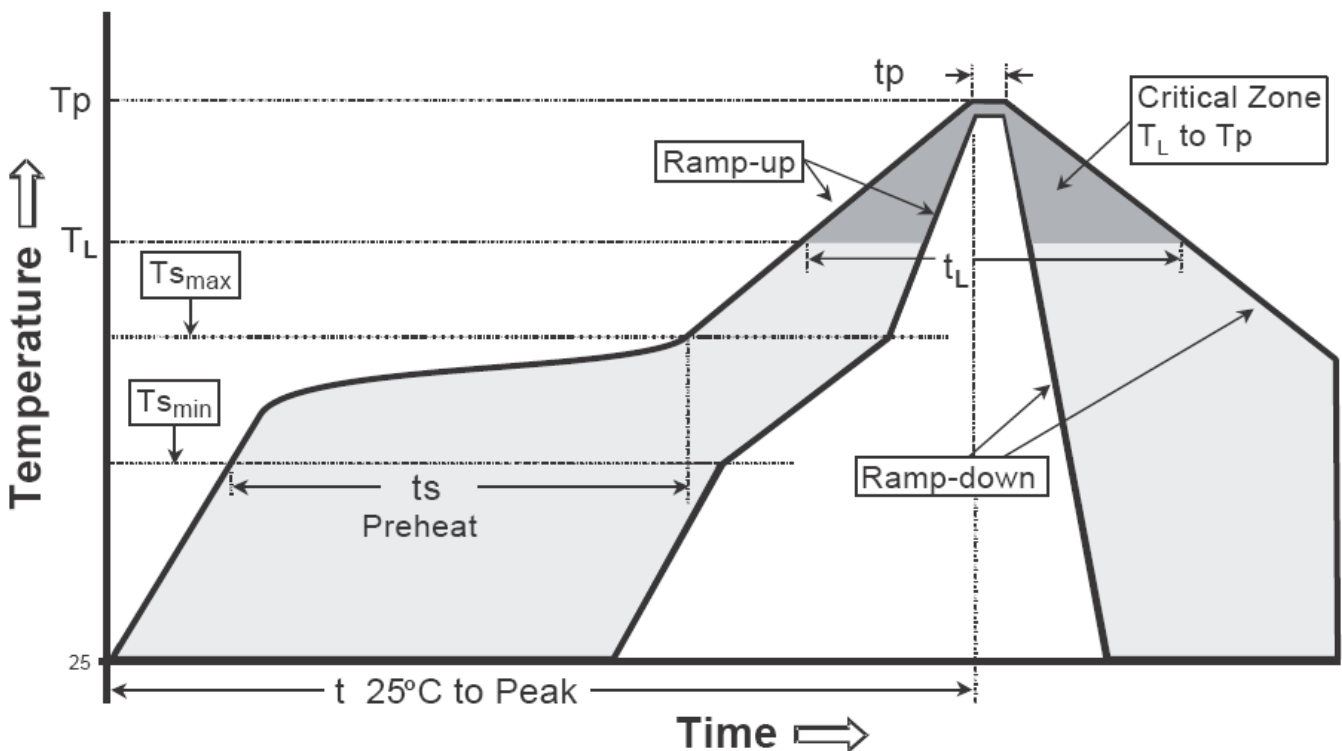
Junction Capacitance vs Reverse Voltage



Recommended wave soldering condition

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

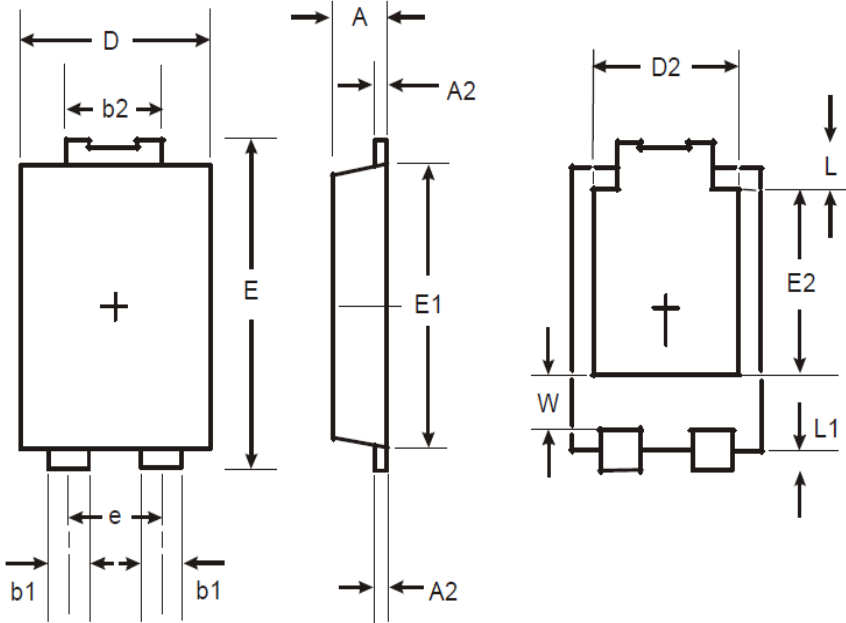
Recommended temperature profile for IR reflow



| 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) | 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. |

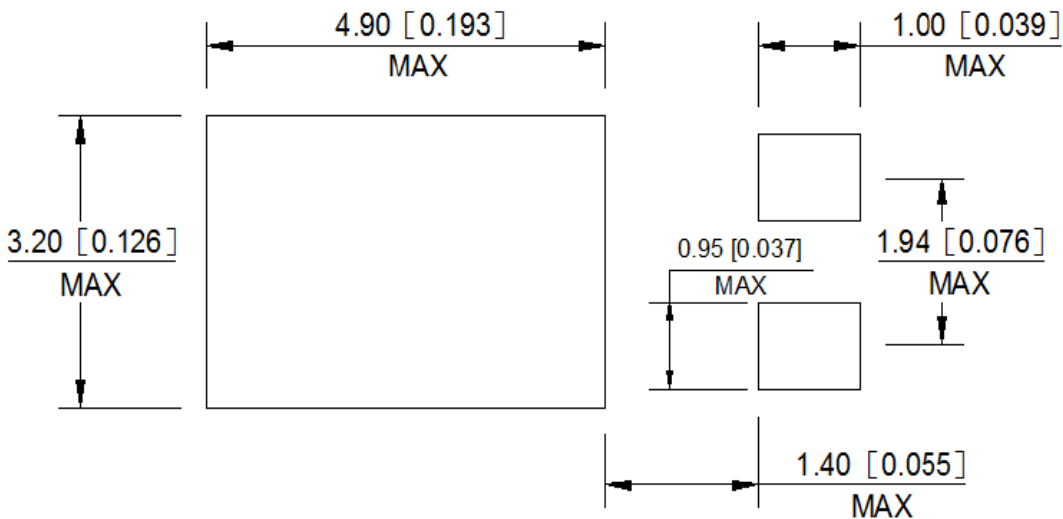
Note : All temperatures refer to topside of the package, measured on the package body surface.

TO-277 Dimension

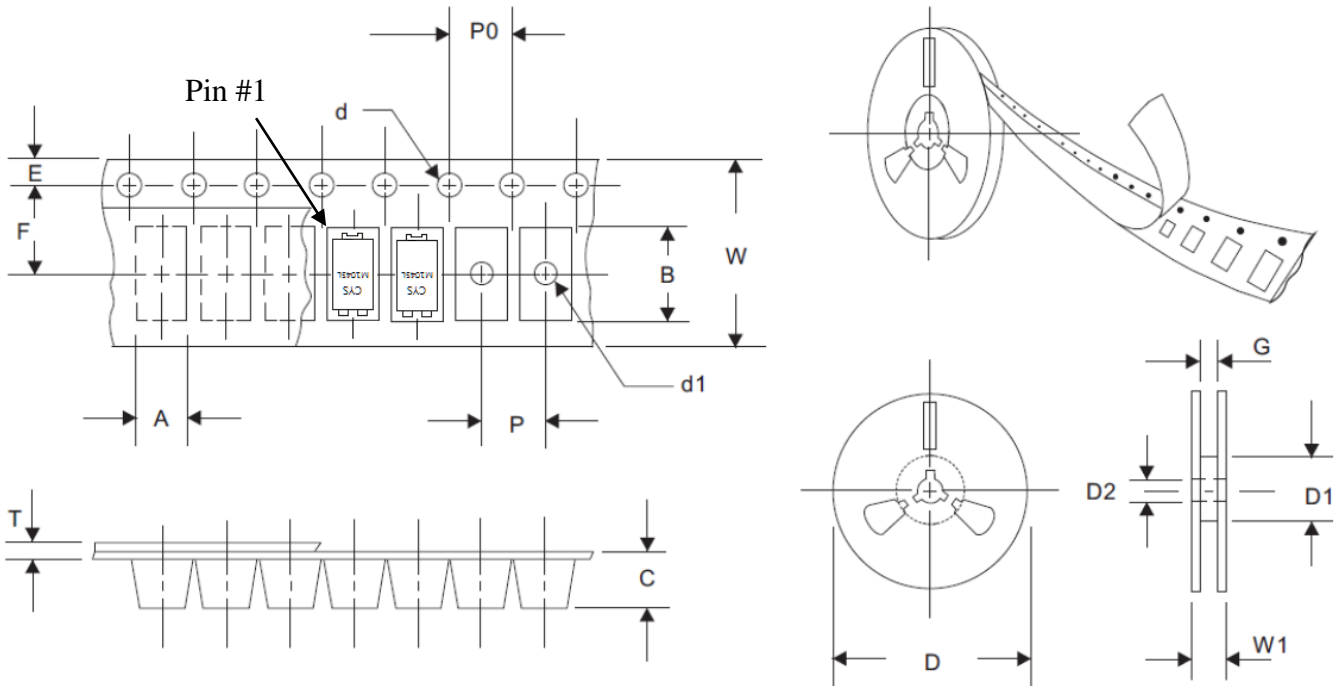


| TO277 | | |
|----------------------|------|------|
| Dim | Min | Max |
| A | 0.95 | 1.25 |
| A2 | 0.2 | 0.3 |
| b1 | 0.85 | 0.95 |
| b2 | 1.7 | 1.9 |
| D | 3.88 | 4.08 |
| D2 | 2.9 | 3.2 |
| E | 6.3 | 6.7 |
| e | 1.74 | 1.94 |
| E1 | 5.28 | 5.48 |
| E2 | 3.4 | 3.7 |
| L | 0.7 | 1 |
| L1 | 0.5 | 0.75 |
| 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 |
|----|------|-----|-----|-----|-----|------|-----|---|----|------|-----|----|----|------|----|
| 12 | 4.38 | 6.9 | 1.4 | 1.5 | 1.5 | 1.75 | 5.5 | 8 | 4 | 0.34 | 330 | 72 | 13 | 12.4 | 18 |

Unit : mm

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