MAHE1A~MAHE1M

Surface Mount Ultra Fast Rectifiers

Features

- Low profile package
- Ideal for automated placement
- Glass passivated chip junctions
- Ultrafast reverse recovery time
- Low switching losses, high efficiency
- High forward surge capability
- High temperature soldering:
  260℃/10 seconds at terminals
- Component in accordance to
  RoHS 2002/95/1 and WEEE 2002/96/EC

Mechanical Date

- **Case:** JEDEC MSMA molded plastic body over glass passivated chip
- **Terminals:** Solder plated, solderable per J-STD-002B and JESD22-B102D
- **Polarity:** Laser band denotes cathode end

Major Ratings and Characteristics

$I_{F(AV)}$	**1.0 A**
V_{RRM}	**50 V to 1000 V**
I_{FSM}	**30 A**
t_{rr}	**50nS, 75nS**
V_F	**1.0 V, 1.3 V, 1.7 V**
T_j **max.**	**150 °C**

Maximum Ratings & Thermal Characteristics

(T_A = 25 °C unless otherwise noted)

Items	Symbol	MAHE 1A	MAHE 1B	MAHE 1D	MAHE 1G	MAHE 1J	MAHE 1K	MAHE 1M	UNIT
Maximum repetitive peak reverse voltage	V_{RRM}	50	100	200	400	600	800	1000	V
Maximum RMS voltage	V_{RMS}	35	70	140	280	420	560	700	V
Maximum DC blocking voltage	V_{DC}	50	100	200	400	600	800	1000	V
Maximum average forward rectified current	$I_{F(AV)}$	1.0							A
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I_{FSM}	30							A
Thermal resistance from junction to lead(1)	$R_{\theta JL}$	35							℃/W
Operating junction and storage temperature range	T_J, T_{STG}	–55 to +150							℃

Note 1: Mounted on P.C.B. with 0.2 x 0.2" (5.0 x 5.0mm) copper pad areas.

Electrical Characteristics

(T_A = 25 °C unless otherwise noted)

Items	Test conditions		Symbol	MAHE1A~ MAHE1D	MAHE1G	MAHE1J~ MAHE1M	UNIT
Instantaneous forward voltage	I_F=1.0A(2)		V_F	1.0	1.3	1.7	V
Reverse current	V_R=V_{DC}	T_A=25℃ T_A=125℃	I_R	5 100			μA
Reverse recovery time	I_F = 0.5 A , I_R = 1.0 A , I_{rr} = 0.25 A		t_{rr}	50		75	nS
Typical junction capacitance	4.0V,1.0MHz		C_J	15		10	pF

Note 2: Pulse test:300μs pulse width,1% duty cycle.

Characteristic Curves (T_A=25 ℃ unless otherwise noted)

Fig.1 Forward Current Derating Curve

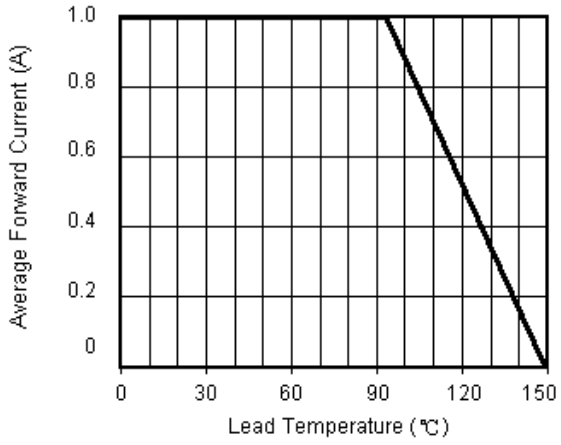


Fig.2 Maximum Non-Repetitive Peak Forward Surge Current

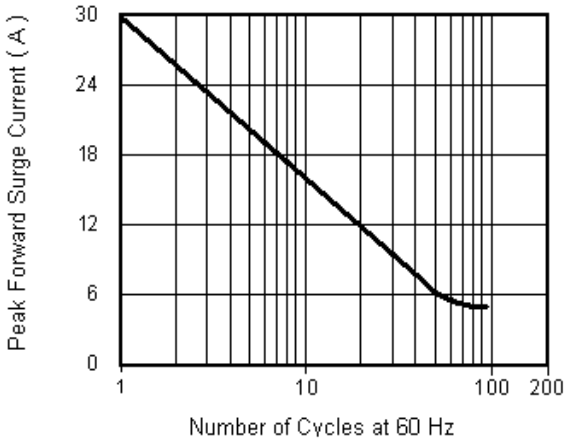


Fig.3 Typical Instantaneous Forward Characteristics

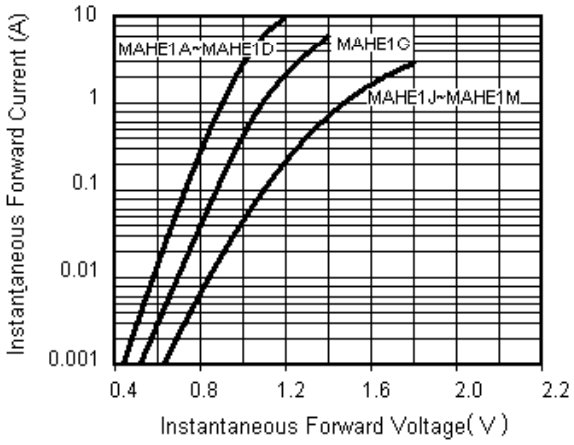


Fig.4 Typical Reverse Leakage Characteristics

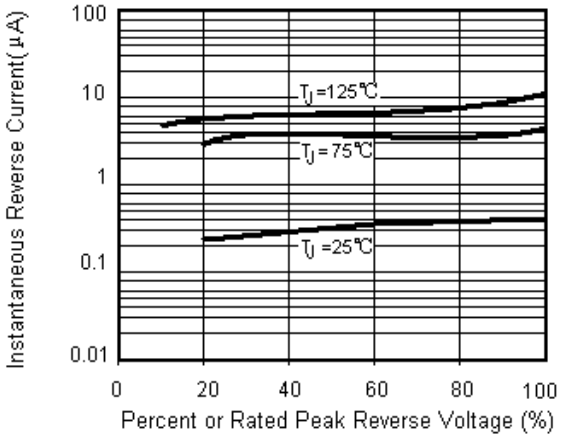


Fig.5 Typical Junction Capacitance

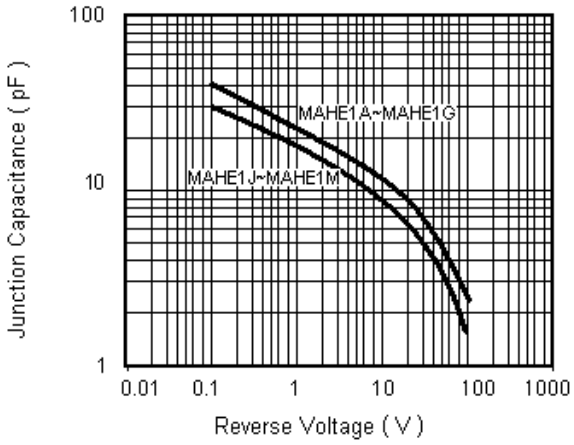
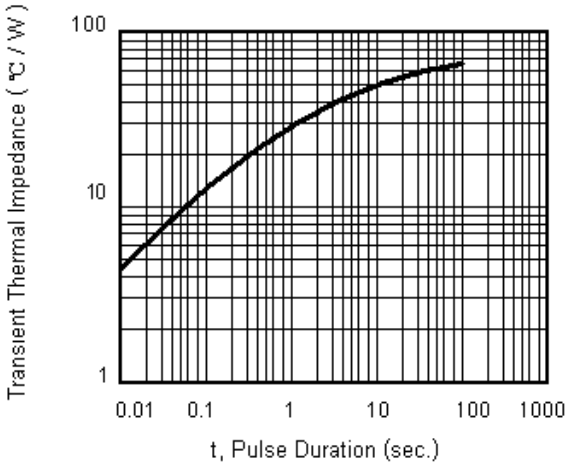
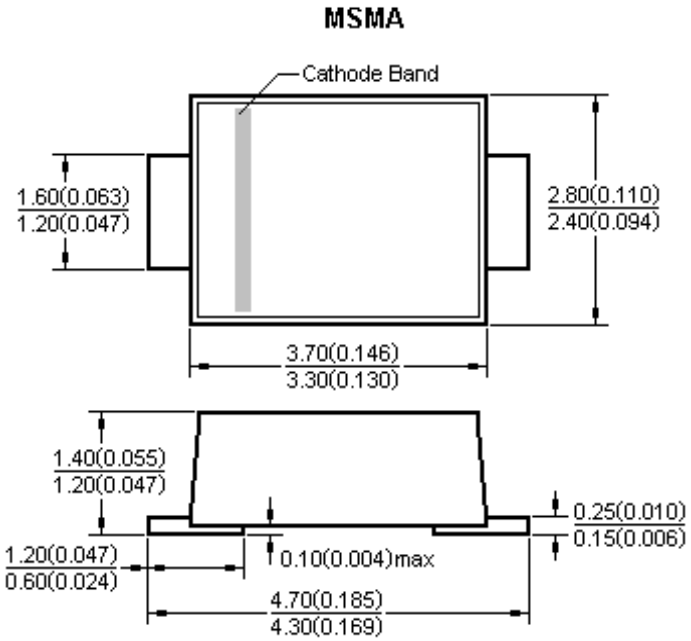


Fig.6 Transient Thermal Impedance



Package Outline



Dimentsions in millimeters and (inches)

Notice

- Product is intended for use in general electronics applications.
- Product should be worked less than the ratings; if exceeded, may cause permanent damage.or introduce latent failure mechanisms.
- The absolute maximum ratings are rated values and must not be exceeded during operation. The following are the general derating methods you design a circuit with a device.

  $I_{F(AV)}$: We recommend that the worst case current be no greater than 80% .

  I_{FSM} : This rating specifies the non-repetitive peak current. This is only applied for an abnormal operation, which the general during the lifespan of the device.

  T_J : Derate this rating when using a device in order to ensure high reliability. We recommend that the device be used at a T_J of below 125°C.

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