MRA4003T3G~MRA4007T3G-FS

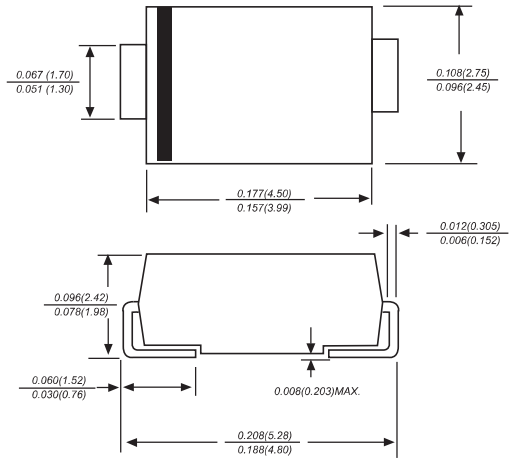
2.0A Surface Mount General Purpose Rectifiers 200V-1000V

Features

- Batch process design, excellent power dissipation offers better reverse leakage current and thermal resistance
- Low profile surface mounted application in order to optimize board space
- High current capability
- High surge capability
- Glass passivated chip junction
- Lead free parts meet RoHS requirements

Package outline

SMA/DO-214AC



Dimensions in inches and (millimeters)

Mechanical data

- Epoxy:UL94-V0 rated flame retardant
- Case : Molded plastic, SMA/DO-214AC
- Terminals : Solder plated, solderable per MIL-STD-750, Method 2026
- Polarity : Indicated by cathode band
- Mounting Position : Any

Maximum ratings (AT T_A=25°C unless otherwise noted)

PARAMETER	SYMBOLS	MRA4003T3G	MRA4004T3G	MRA4005T3G	MRA4006T3G	MRA4007T3G	UNIT
Maximum repetitive peak reverse voltage	V_{RRM}	200	400	600	800	1000	V
Maximum RMS voltage	V_{RMS}	140	280	420	560	700	V
Maximum continuous reverse voltage	V_R	200	400	600	800	1000	V
Maximum average forward rectified current	I_O	2.0					A
Non-repetitive peak forward surge current 8.3ms single half sine-wave (JEDEC methode)	I_{FSM}	50					A
Typical junction capacitance, Note1	C_J	30					pF
Operating junction temperature range	T_J	-55 to +150					°C
Storage temperature range	T_{STG}	-65 to +175					°C

Electrical characteristics (AT T_A=25°C unless otherwise noted)

PARAMETER	SYMBOLS	MRA4003T3G	MRA4004T3G	MRA4005T3G	MRA4006T3G	MRA4007T3G	UNIT
Maximum instantaneous forward voltage at I_F=2.0A	V_F	1.18					V
Maximum reverse leakage current T_J =25°C at rated V_R T_J =125°C	I_R	5.0 50					μA μA

Thermal characteristics

PARAMETER	SYMBOLS	MRA4003T3G	MRA4004T3G	MRA4005T3G	MRA4006T3G	MRA4007T3G	UNIT
Typical thermal resistance junction to ambient, Note2 Typical thermal resistance junction to case, Note2	$R_{\theta JA}$ $R_{\theta JC}$	48 26					°C/W °C/W

Notes 1: Measured at 1MHz and applied reverse voltage of 4.0V D.C

2: Mounted on FR-4 PCB copper, minimum recommended pad layout

Rating and characteristic curves

FIG. 1- FORWARD CURRENT DERATING CURVE

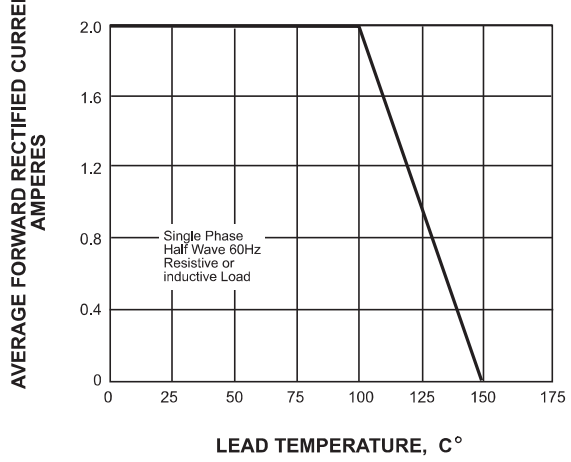


FIG. 2-MAXIMUM NON-REPETITIVE PEAK FORWARD SURGE CURRENT

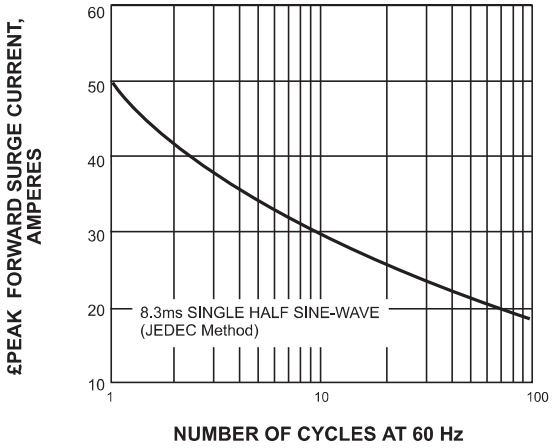


FIG. 3-TYPICAL INSTANTANEOUS FORWARD CHARACTERISTICS

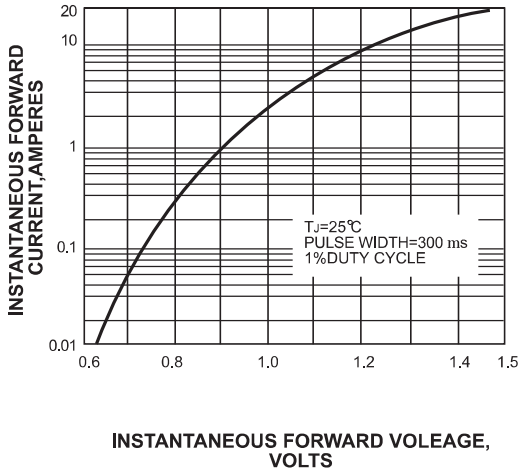


FIG. 4-TYPICAL REVERSE CHARACTERISTICS

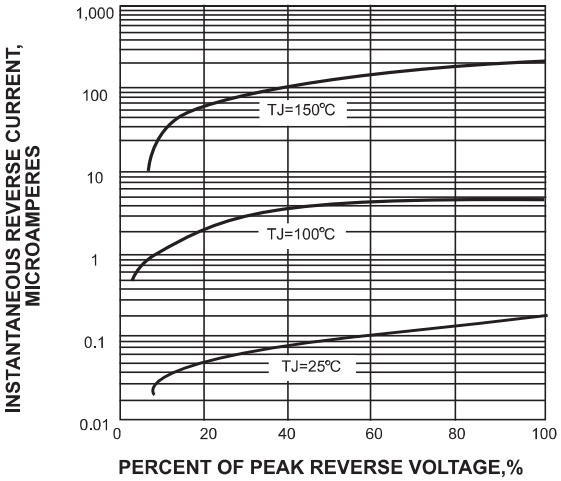


FIG. 5-TYPICAL JUNCTION CAPACITANCE

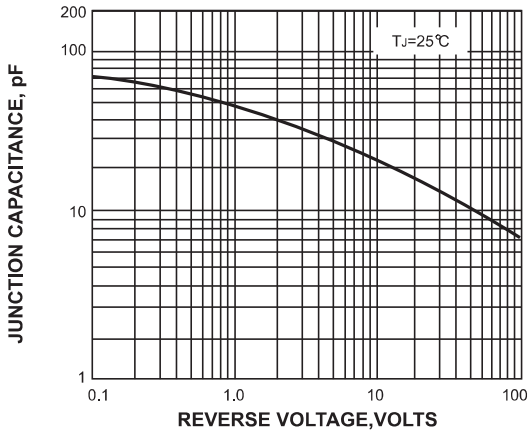
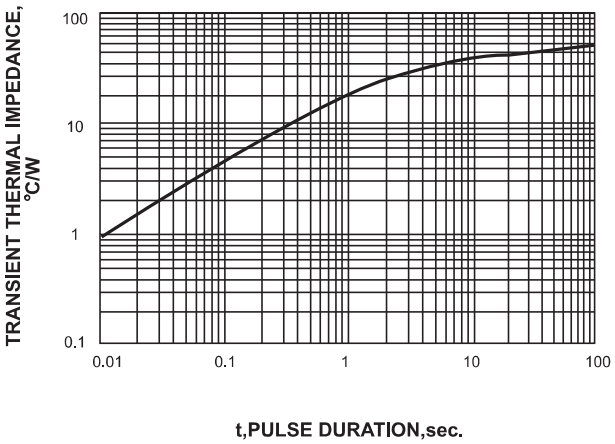


FIG. 6-TYPICAL TRANSIENT THERMAL IMPEDANCE



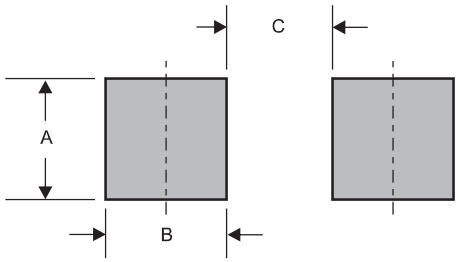
Pinning information

Pin	Simplified outline	Symbol
Pin1 cathode Pin2 anode		

Marking

Type number	Marking code
MRA4003T3G-FS	R13
MRA4004T3G-FS	R14
MRA4005T3G-FS	R15
MRA4006T3G-FS	R16
MRA4007T3G-FS	R17

Suggested solder pad layout

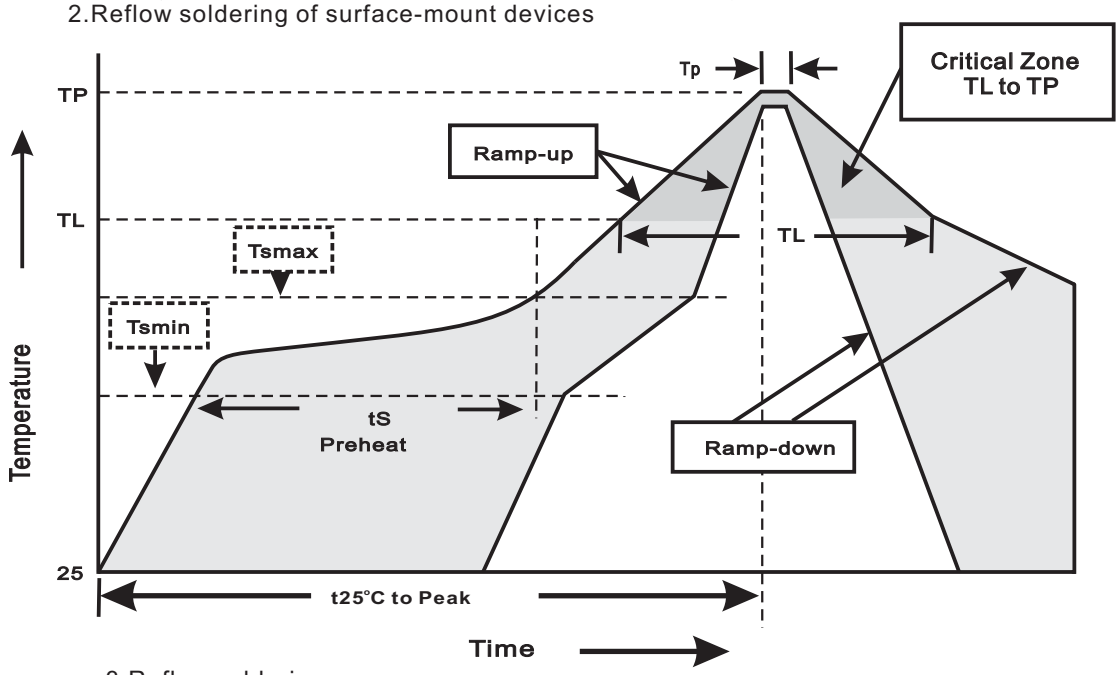


Dimensions in inches and (millimeters)

PACKAGE	A	B	C
SMA	0.110 (2.80)	0.063 (1.60)	0.087 (2.20)

Suggested thermal profiles for soldering processes

1.Storage environment: Temperature=5°C~40°C Humidity=55%±25%
2.Reflow soldering of surface-mount devices



3.Reflow soldering

Profile Feature	Soldering Condition
Average ramp-up rate(T_L to T_P)	<3°C/sec
Preheat -Temperature Min(Tsmin) -Temperature Max(Tsmax) -Time(min to max)(t_s)	 150°C 200°C 60~120sec
Tsmax to T_L -Ramp-upRate	 <3°C/sec
Time maintained above: -Temperature(T_L) -Time(t_L)	 217°C 60~260sec
Peak Temperature(T_P)	255°C-0/+5°C
Time within 5°C of actual Peak Temperature(t_P)	10~30sec
Ramp-down Rate	<6°C/sec
Time 25°C to Peak Temperature	<6minutes