FR601G-Q1 Thru FR607G-Q1

List

FR601G-Q1 Thru FR607G-Q1

6.0A Axial Leaded Fast Recovery Rectifiers : 50V-1000V

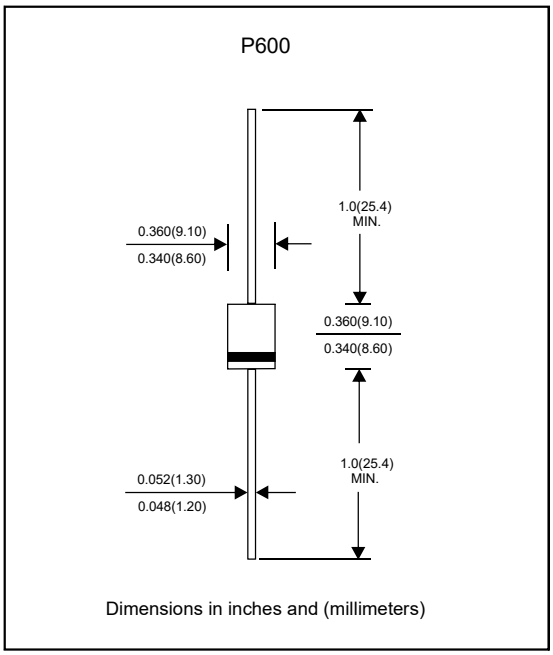
Features

- Low reverse leakage.
- High forward surge capability.
- High reliability
- High temperature soldering guaranteed: 260℃/10sec, 0.375" (9.5mm) 260℃/10seconds,9.5mm lead length.
- Lead and body according with RoHs standard.
- Suffix "-H" indicates Halogen-free parts, ex.FR601G-Q1-H.

Mechanical data

- Case : P600 Molded plastic.
- Epoxy : UL 94V-0 rate flame retardant.
- Lead : Pure tin plated, lead free.
- System: Accreditation through IATF16949 system.
- High reliability grade (AEC Q101 qualified).
- Weight : Approximated 1.75 gram.

Package outline



Dimensions in inches and (millimeters)

Maximum ratings and electrical characteristics (At T_A=25°C unless otherwise noted)

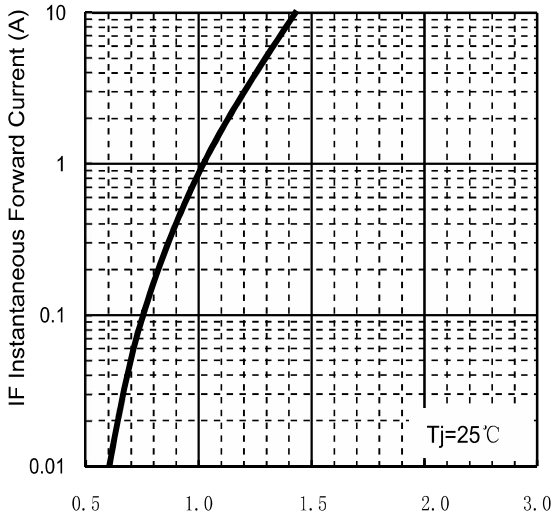
Parameter	Symbol	FR601 G-Q1	FR602 G-Q1	FR603 G-Q1	FR604 G-Q1	FR605 G-Q1	FR606 G-Q1	FR607 G-Q1	Unit
Maximum repetitive peak reverse voltage	V_{RRM}	50	100	300	400	600	800	1000	V
Maximum RMS voltage	V_{RMS}	35	70	140	280	430	560	700	V
Maximum DC blocking voltage	V_{DC}	50	100	300	400	600	800	1000	V
Maximum average forward rectified Current	$I_{(AV)}$	6.0							A
Non-repetitive peak forward surge current 8.3ms single half sine-wave	I_{FSM}	180.0							A
Maximum forward voltage at I_F = 6.0A	V_F	1.3							V
Maximum DC reverse current (T_A=25℃)	I_R	5.0							μA
Maximum DC reverse current (T_A=125℃)		100							
Maximum reverse recovery time (Note 1)	t_{rr}	35				250	300		ns
Typical junction capacitance (Note 2)	C_J	110							pF
Typical thermal resistance Junction to ambient (Note 3)	$R_{\theta JA}$	20							℃/W
Operating junction temperature range	T_J	+150							℃
Storage temperature range	T_{STG}	-55 to +150							℃

Note : 1. Reverse recovery time test condition : I_F=0.5A, I_R=1.0A, I_{rr}=0.25A.
2. Measured at 1MHz and applied reverse voltage of 4.0V D.C.
3. Thermal resistance from junction to ambient at 0.375" (9.5 mm) lead length, PCB mounted.

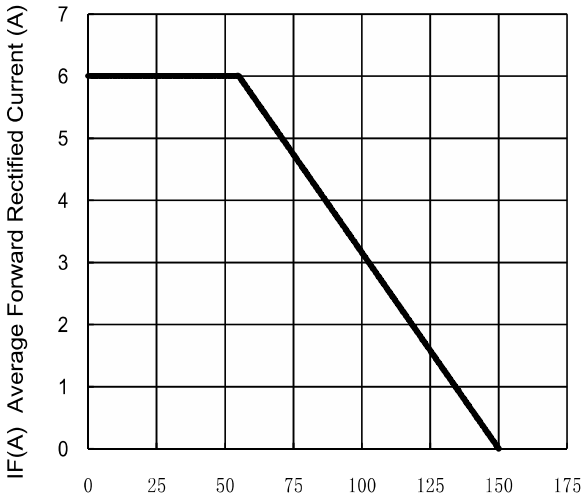
FR601G-Q1 Thru FR607G-Q1

Rating and characteristic curves

FORWARD CHARACTERISTIC

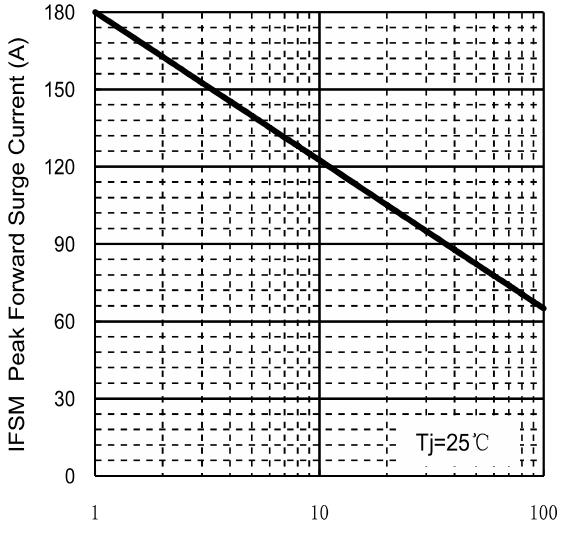


FORWARD CURRENT DERATING CURVE

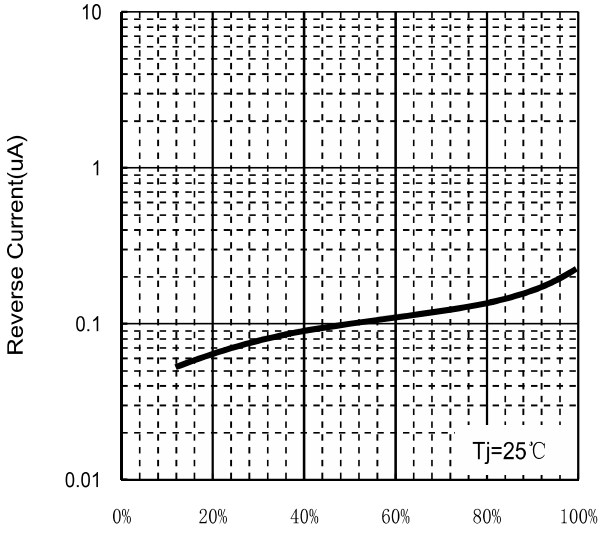


MAXIMUM NON REPETITIVE

PEAK FORWARD SURGE CURRENT



Typical Reverse Characteristics



FR601G-Q1 Thru FR607G-Q1

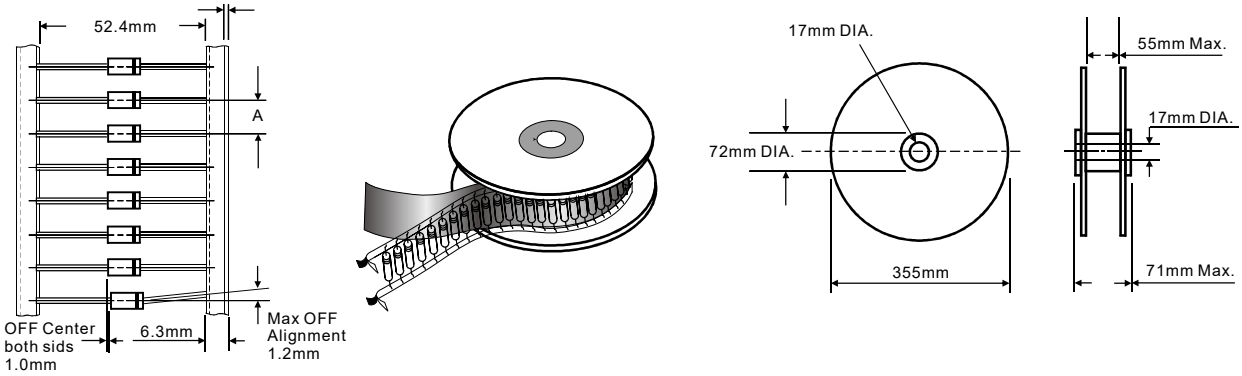
Pinning information

Pin	Simplified outline	Symbol
Pin1 Cathode Pin2 Anode		

Marking

Type number	Type number
FR601G-Q1	FR601-Q
FR602G-Q1	FR602-Q
FR603G-Q1	FR603-Q
FR604G-Q1	FR604-Q
FR605G-Q1	FR605-Q
FR606G-Q1	FR606-Q
FR607G-Q1	FR607-Q

Taping & bulk specifications for AXIAL devices



REEL PACKING

DEVICE CASE TYPE	Q'TY 1 (PCS / REEL)	COMPONENT SPACING "A" in FIG. A	CARTON SIZE	Q'TY 2 (PCS / CARTON)	APPROX. CROSS WEIGHT(kg)
P600	1,000	5 mm	360 * 340 * 375	4,000	9.5

AMMO PACKING

DEVICE CASE TYPE	Q'TY 1 (PCS / BOX)	INNER BOX SIZE (m/m)	CARTON SIZE (m/m)	Q'TY 2 (PCS / CARTON)	APPROX. CROSS WEIGHT(kg)
P600	500	260 * 83 * 160	440 * 270 * 340	5,000	12.0

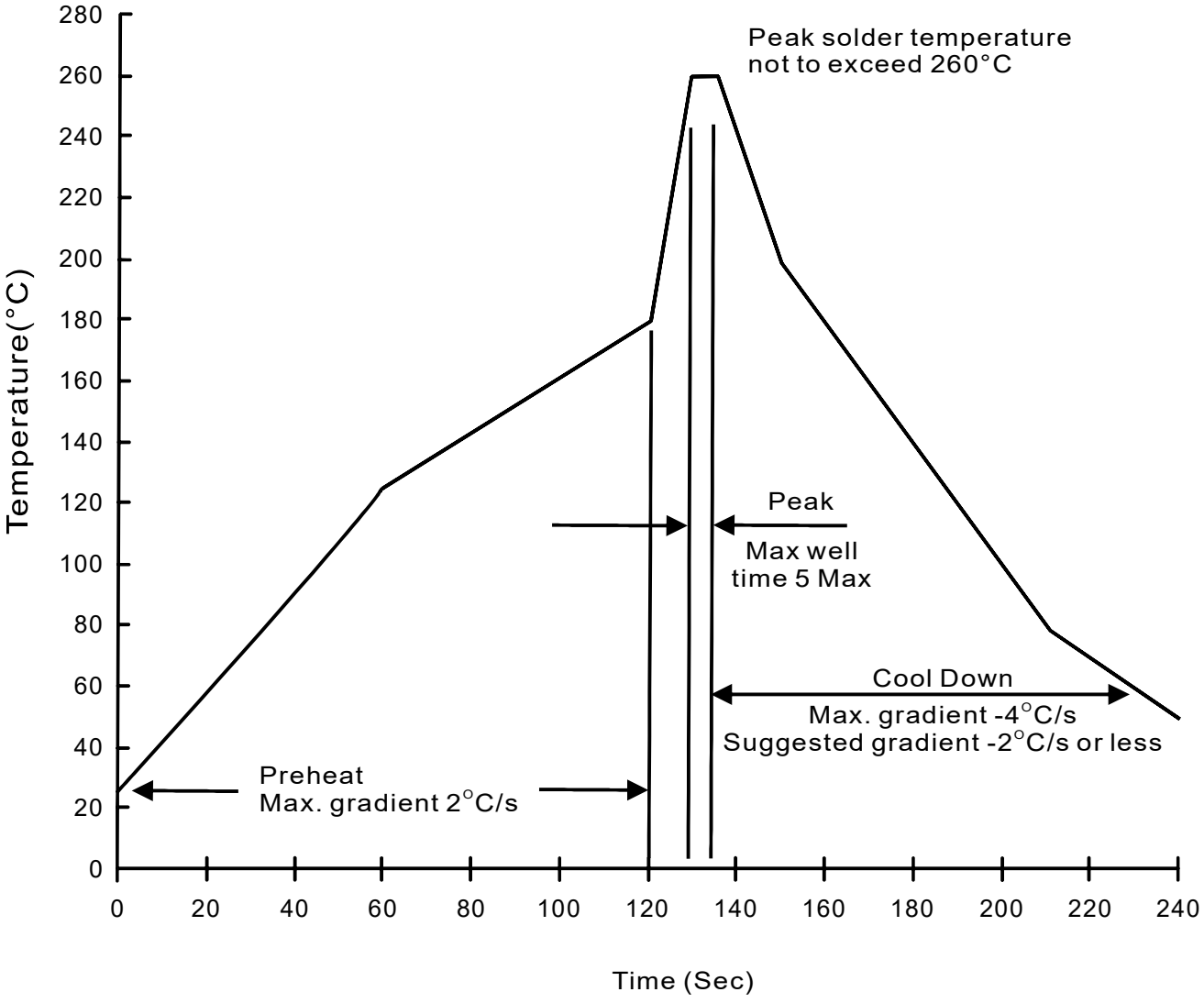
FR601G-Q1 Thru FR607G-Q1

BULK PACKING

DEVICE CASE TYPE	Q'TY 1 (PCS / BOX)	INNER BOX SIZE (m/m)	CARTON SIZE (m/m)	Q'TY 2 (PCS / CARTON)	APPROX. CROSS WEIGHT(kg)
P600	250	305 * 73 * 40	347 * 320 * 271	6,000	14.5

Suggested thermal profiles for soldering processes

1.Lead free temperature profile wave-soldering



FR601G-Q1 Thru FR607G-Q1

High reliability test capabilities

Item Test	Conditions	Reference
1. Solder Resistance	at 260±5°C for 10±2sec. immerse body into solder 1/16"±1/32"	MIL-STD-750D METHOD-2031
2. Solderability	at 245±5°C for 5 sec.	MIL-STD-202F METHOD-208
3. Pull Test	2.0kg in axial lead direction for 10 sec. $I_F=I_O$	MIL-STD-202F METHOD-211A
4. Bend Lead	2.0kg weight applied to each lead bending arc 90°±5° for 3 times	MIL-STD-202F METHOD-211A
5. High Temperature Reverse Bias	V_R=80% rate at T_J=125°C for 168 hrs.	MIL-STD-750D METHOD-1038
6. Forward Operation Life	Rated average rectifier current at T_A=25°C for 500hrs.	MIL-STD-750D METHOD-1027
7. Intermittent Operation Life	T_A = 25°C, I_F = I_O On state: power on for 5 min. off state: power off for 5 min, on and off for 500 cycles.	MIL-STD-750D METHOD-1036
8. Pressure Cooker	15P_{SIG} at T_A=121°C for 4 hrs.	JESD22-A102
9. Temperature Cycling	-55°C to +125°C dwelled for 30 min. and transferred for 5min. total 10 cycles.	MIL-STD-750D METHOD-1051
10. Forward Surge	8.3ms single half sine-wave one surge.	MIL-STD-750D METHOD-4066-2
11. Humidity	at T_A=85°C, RH=85% for 1000hrs.	MIL-STD-750D METHOD-1021
12. High Temperature Storage Life	at 175°C for 1000 hrs.	MIL-STD-750D METHOD-1031