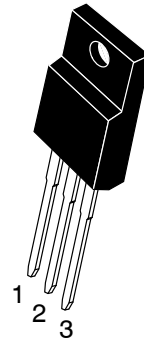


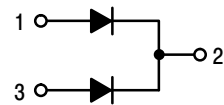


TO-220F



Features

- Metal silicon junction, majority carrier conduction
- Plastic material used carries Underwriters Laboratory Classifications 94V-0
- High surge capability
- Low power loss, high efficiency
- High current capability, low forward voltage drop
- For use in low voltage, high frequency inverters, free wheeling, and polarity protection applications
- Guardring for overvoltage protection
- High temperature soldering guaranteed: 260°C/10 seconds, at terminals
- Green compound with suffix "G" on packing code & prefix "G" on datecode.



Mechanical Data

- Case: TO-220F molded plastic body
- Polarity: As marked
- Terminals: Pure tin plated, lead free. solderable per MIL-STD-750, Method 2026
- Mounting position: Any
- Weight: 1.74grams
- Mounting torque: 5 in. - lbs. max

Marking Diagram



- Y = Year
- A = Assembly Location
- WW = Work Week
- MBRF10XX = Specific Device Code

Maximum Ratings and Electrical Characteristics

Rating at 25 °C ambient temperature unless otherwise specified.
 Single phase, half wave, 60 Hz, resistive or inductive load.
 For capacitive load, derate current by 20%

Type Number	Symbol	MBRF 1040 CTG	MBRF 1045 CTG	MBRF 1050 CTG	MBRF 1060 CTG	MBRF 1080 CTG	MBRF 10100 CTG	MBRF 10150 CTG	MBRF 10200 CTG	Unit
Maximum Repetitive Peak Reverse Voltage	V _{RRM}	40	45	50	60	80	100	150	200	V
Maximum RMS Voltage	V _{RMS}	28	31	35	42	56	70	105	140	V
Maximum DC Blocking Voltage	V _{DC}	40	45	50	60	80	100	150	200	V
Maximum Average Forward Rectified Current at Tc=133°C	I _{F(AV)}	10								A
Peak Repetitive Forward Current (Rated VR, Square Wave, 20KHz) at Tc=133°C	I _{FRM}	20								A
Peak Forward Surge Current, 8.3 ms Single Half Sine-wave Superimposed on Rated Load (JEDEC method)	I _{FSM}	150								A
Peak Repetitive Reverse Surge Current (Note 1)	I _{RRM}	0.5								A
Maximum Instantaneous Forward Voltage (Note 2) IF=5A, TA=25°C IF=5A, TA=125°C IF=10A, TA=25°C IF=10A, TA=125°C	V _F	0.70 0.55 0.80 0.70	0.74 0.60 0.85 0.74	0.74 0.60 0.85 0.74	0.80 0.70 0.90 0.80	0.80 0.70 0.90 0.80	0.85 0.75 0.95 0.85	0.85 0.75 0.95 0.85		V
Maximum Reverse Current @ Rated VR TA=25°C TA=125°C	I _R	0.1								mA
		15	10	5						
Voltage Rate of Change (Rated V _R)	dV/dt	10000								V/us
Typical Thermal Resistance Per Leg	R _{θJC}	3.5								°C/W
Operating Temperature Range	T _J	- 65 to + 175								°C
Storage Temperature Range	T _{STG}	- 65 to + 150								°C

Note 1: 2.0uS Pulse Width, f=1.0KHz
 Note 2: Pulse Test : 300uS Pulse Width, 1% Duty Cycle



RATINGS AND CHARACTERISTIC CURVES

FIG. 1 FORWARD CURRENT DERATING CURVE

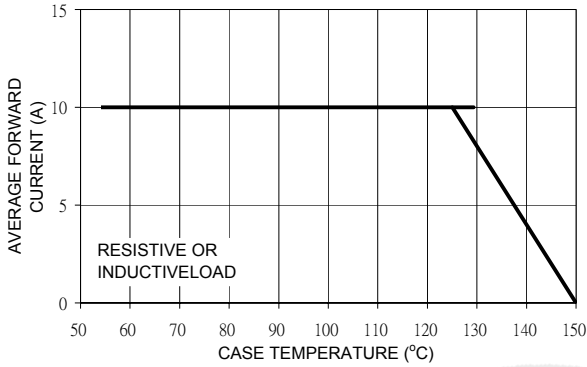


FIG. 2 MAXIMUM NON-REPETITIVE FORWARD SURGE CURRENT PER LEG

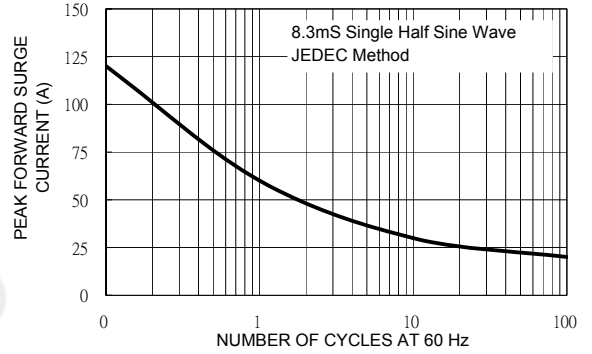


FIG. 3 TYPICAL FORWARD CHARACTERISTICS PER LEG

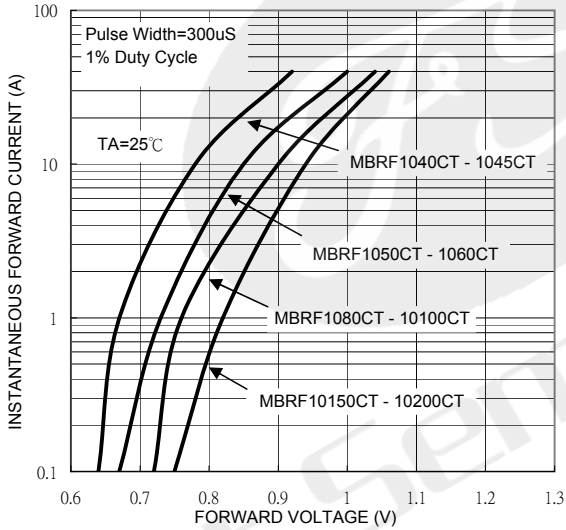


FIG. 4 TYPICAL REVERSE CHARACTERISTICS PER LEG

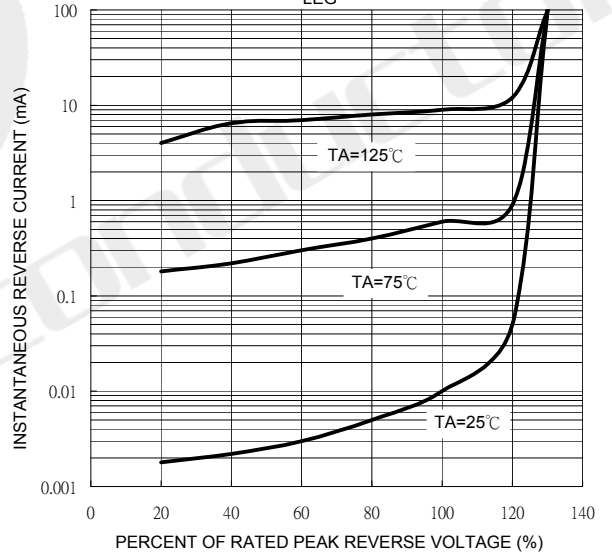


FIG. 5 TYPICAL JUNCTION CAPACITANCE PER LEG

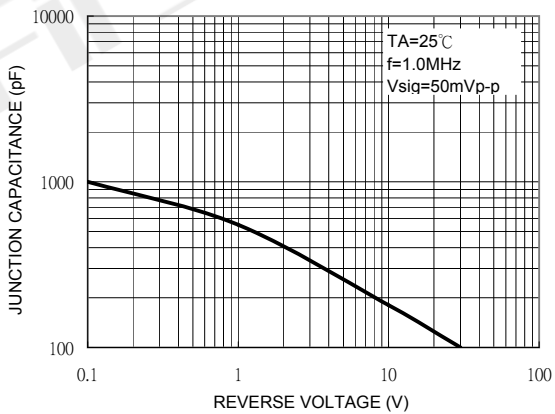
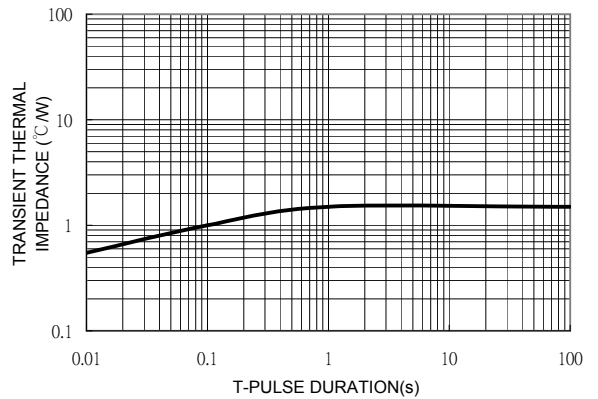


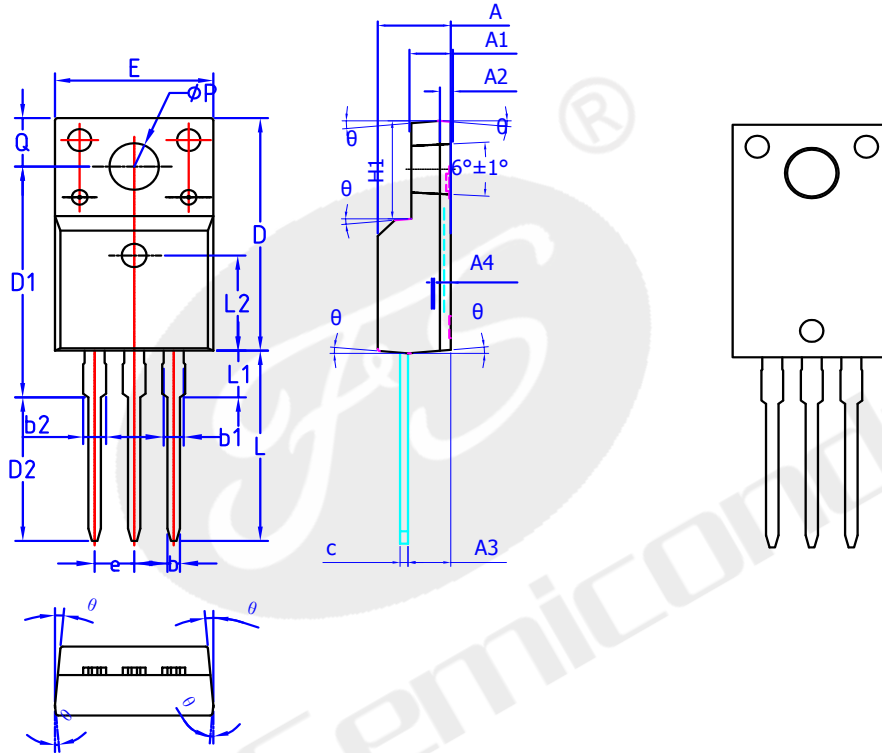
FIG. 6 TYPICAL TRANSIENT THERMAL IMPEDANCE PER LEG





Package Dimensions

TO-220F



COMMON DIMENSIONS
(UNITS OF MEASURE=MILLIMETER)

SYMBOL	MIN	NOM	MAX
A	4.50	4.70	4.90
A1	2.34	2.54	2.74
A2	0.70 REF		
A3	2.56	2.76	2.96
b	0.70	0.80	0.90
b1	1.17	1.2	1.25
b2	1.17	1.2	1.25
c	0.45	0.50	0.60
D	15.67	15.87	16.07
D1	15.55	15.75	15.95
D2	10.0	10.2	10.4
E	9.96	10.16	10.36
e	2.54BSC		
H1	6.48	6.68	6.88
L	12.68	12.98	13.28
L1	-	-	3.50
L2	6.50REF		
phi P	3.08	3.18	3.28
Q	3.20	3.30	3.40
phi 1	1*	3*	5*
A4	0.53	0.56	0.59



Declaration

- FIRST reserves the right to change the specifications, the same specifications of products due to different packaging line mold, the size of the appearance will be slightly different, shipped in kind, without notice! Customers should obtain the latest version information before ordering, and verify whether the relevant information is complete and up-to-date.
- Any semiconductor product under certain conditions has the possibility of failure or failure, The buyer has the responsibility to comply with safety standards and take safety measures when using FIRST products for system design and manufacturing, To avoid To avoid potential failure risks, which may cause personal injury or property damage!
- Product promotion endless, our company will wholeheartedly provide customers with better products!

ATTACHMENT

Revision History

Date	REV	Description	Page
2018.01.01	1.0	Initial release	