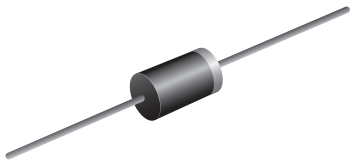
Glass Passivated Ultrafast Plastic Rectifier

SUPERECTIFIER®



GP20

FEATURES

- Superectifier structure for high reliability condition
- Cavity-free glass-passivated junction
- Ultrafast reverse recovery time
- Low forward voltage drop
- Low leakage current
- Low switching losses, high efficiency
- High forward surge capability
- Meets environmental standard MIL-S-19500
- Solder dip 275 °C max. 10 s, per JESD 22-B106
- AEC-Q101 qualified
- Material categorization: For definitions of compliance please see www.vishay.com/doc?99912

RoHS COMPLIANT

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	5.0 A
V_{RRM}	100 V, 150 V, 200 V
I_{FSM}	135 A
t_{rr}	35 ns
V_F	0.95 V
I_R	5.0 µA
T_J max.	175 °C
Package	GP20
Diode variations	Single die

TYPICAL APPLICATIONS

For use in high frequency rectification and freewheeling application in switching mode converters and inverters for consumer, computer, automotive and telecommunication.

MECHANICAL DATA

Case: GP20, molded epoxy over glass body
Molding compound meets UL 94 V-0 flammability rating
Base P/N-E3 - RoHS-compliant, commercial grade
Base P/NHE3 - RoHS-compliant, AEC-Q101 qualified

Terminals: Matte tin plated leads, solderable per J-STD-002 and JESD 22-B102
E3 suffix meets JESD 201 class 1A whisker test, HE3 suffix meets JESD 201 class 2 whisker test

Polarity: Color band denotes cathode end

MAXIMUM RATINGS (T_A = 25 °C unless otherwise noted)

PARAMETER	SYMBOL	FGP50B	FGP50C	FGP50D	UNIT
Maximum repetitive peak reverse voltage	V_{RRM}	100	150	200	V
Maximum RMS voltage	V_{RMS}	70	105	140	V
Maximum DC blocking voltage	V_{DC}	100	150	200	V
Maximum average forward rectified current 0.375" (9.5 mm) lead length (fig. 1)	$I_{F(AV)}$	5.0			A
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I_{FSM}	135			A
Operating junction and storage temperature range	T_J, T_{STG}	- 65 to + 175			°C

ELECTRICAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)							
PARAMETER	TEST CONDITIONS		SYMBOL	FGP50B	FGP50C	FGP50D	UNIT
Maximum instantaneous forward voltage	5.0 A		V_F (1)	0.95			V
Maximum DC reverse current at rated DC blocking voltage		T_A = 25 °C	I_R	5.0			μA
		T_A = 100 °C		50			
Maximum reverse recovery time	I_F = 0.5 A, I_R = 1.0 A, I_{rr} = 0.25 A		t_{rr}	35			ns
Typical junction capacitance	4.0 V, 1 MHz		C_J	100			pF

Note

(1) Pulse test: 300 μs pulse width, 1 % duty cycle

THERMAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)					
PARAMETER	SYMBOL	FGP50B	FGP50C	FGP50D	UNIT
Typical thermal resistance	$R_{\theta JA}$ (1)	60			°C/W
	$R_{\theta JL}$ (2)	20			

Notes

(1) Thermal resistance from junction to lead at 0.375" (9.5 mm) lead length with both leads attached to heatsinks

(2) Thermal resistance from junction to ambient at 0.375" (9.5 mm) lead length and mounted on PCB

ORDERING INFORMATION (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
FGP50D-E3/54	1.01	54	1400	13" diameter paper tape and reel
FGP50D-E3/73	1.01	73	2000	Ammo pack packaging
FGP50DHE3/54 (1)	1.01	54	1400	13" diameter paper tape and reel
FGP50DHE3/73 (1)	1.01	73	2000	Ammo pack packaging

Note

(1) AEC-Q101 qualified

RATINGS AND CHARACTERISTICS CURVES (T_A = 25 °C unless otherwise noted)

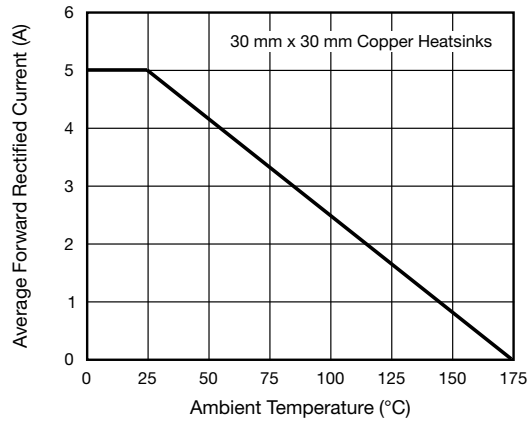


Fig. 1 - Maximum Forward Current Derating Curve

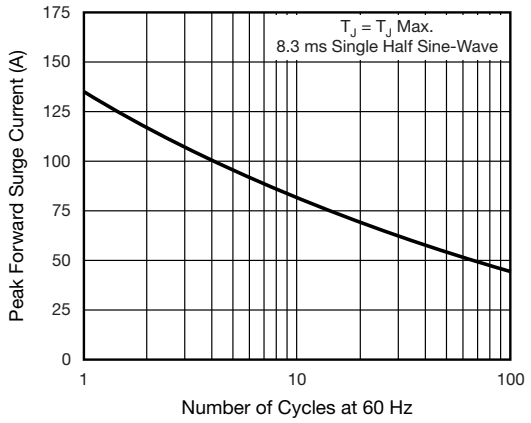


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

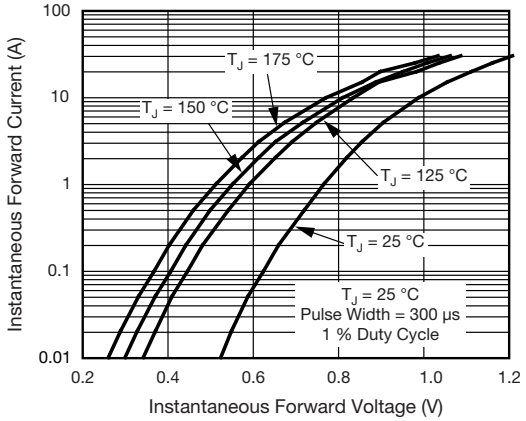


Fig. 3 - Typical Instantaneous Forward Characteristics

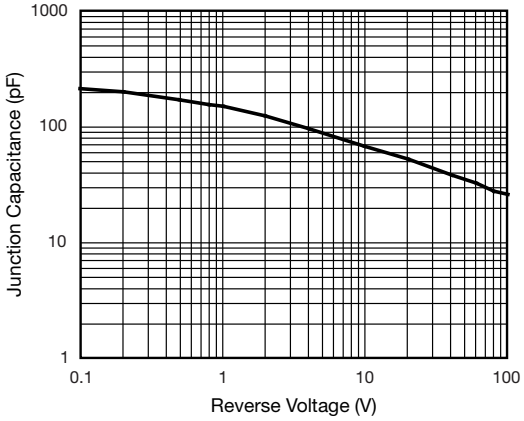


Fig. 5 - Typical Junction Capacitance

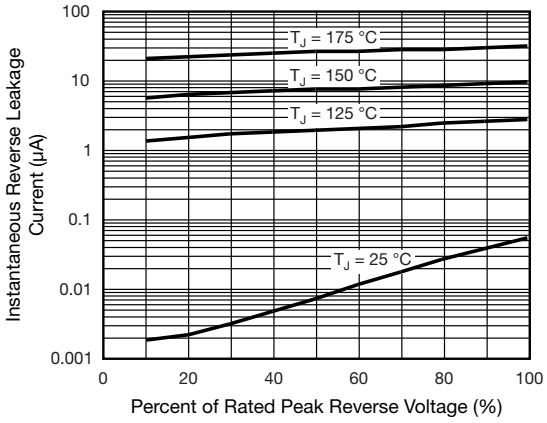
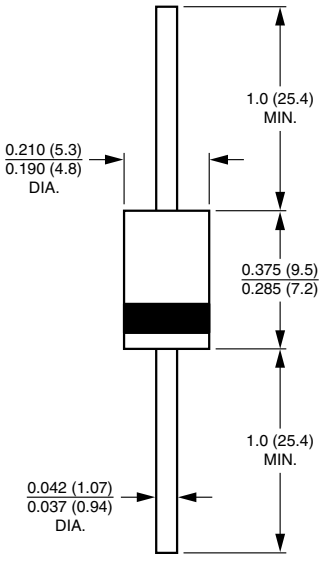


Fig. 4 - Typical Reverse Leakage Characteristics

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

GP20



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