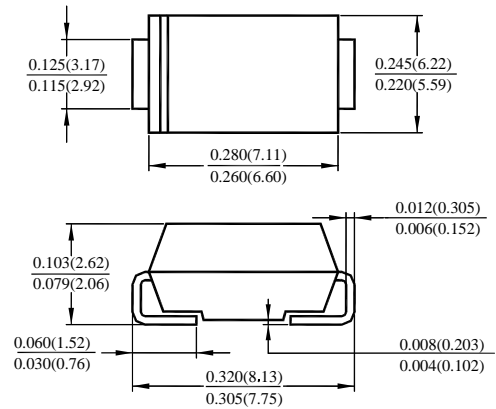


30BQ100

FEATURES

- Small foot print, surface mountable
- Very low forward voltage drop
- High frequency operation
- Guard ring for enhanced ruggedness and long term reliability
- Lead (Pb)-free (“PbF” suffix)
- Designed and qualified for industrial level



Dimensions in inches and (millimeters)

DO-214AB (SMC)

MAJOR RATINGS AND CHARACTERISTICS			
SYMBOL	CHARACTERISTICS	VALUES	UNITS
$I_{F(AV)}$	Rectangular waveform	3.0	A
V_{RRM}		100	V
I_{FSM}	$t_p = 5 \mu s$ sine	800	A
V_F	3.0 Apk, $T_J = 125^\circ C$	0.62	V
T_J	Range	- 55 to 175	$^\circ C$

VOLTAGE RATINGS			
PARAMETER	SYMBOL	30BQ100PbF	UNITS
Maximum DC reverse voltage	V_R	100	V
Maximum working peak reverse voltage	V_{RWM}		

ABSOLUTE MAXIMUM RATINGS					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum average forward current	$I_{F(AV)}$	50 % duty cycle at $T_L = 148^\circ C$, rectangular waveform		3.0	A
		50 % duty cycle at $T_L = 138^\circ C$, rectangular waveform		4.0	
Maximum peak one cycle non-repetitive surge current	I_{FSM}	5 μs sine or 3 μs rect. pulse	Following any rated load condition and with rated V_{RRM} applied	800	
		10 ms sine or 6 ms rect. pulse		70	
Non-repetitive avalanche energy	E_{AS}	$T_J = 25^\circ C$, $I_{AS} = 1.0 A$, $L = 6 mH$		3.0	mJ
Repetitive avalanche current	I_{AR}	Current decaying linearly to zero in 1 μs Frequency limited by T_J maximum $V_A = 1.5 \times V_R$ typical		0.5	A

30BQ100

ELECTRICAL SPECIFICATIONS					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum forward voltage drop	$V_{FM}^{(1)}$	3 A	$T_J = 25\text{ }^\circ\text{C}$	0.79	V
		6 A		0.90	
		3 A	$T_J = 125\text{ }^\circ\text{C}$	0.62	
		6 A		0.70	
Maximum reverse leakage current	$I_{RM}^{(1)}$	$T_J = 25\text{ }^\circ\text{C}$	$V_R = \text{Rated } V_R$	0.5	mA
		$T_J = 125\text{ }^\circ\text{C}$		5.0	
Maximum junction capacitance	C_T	$V_R = 5 V_{DC}$ (test signal range 100 kHz to 1 MHz) 25 °C		115	pF
Typical series inductance	L_S	Measured lead to lead 5 mm from package body		3.0	nH
Maximum voltage rate of change	dV/dt	Rated V_R		10 000	V/ μ s

Note

(1) Pulse width < 300 μ s, duty cycle < 2 %

THERMAL - MECHANICAL SPECIFICATIONS					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum junction and storage temperature range	$T_J^{(1)}, T_{Stg}$			- 55 to 175	$^\circ\text{C}$
Maximum thermal resistance, junction to lead	$R_{thJL}^{(2)}$	DC operation		12	$^\circ\text{C/W}$
Maximum thermal resistance, junction to ambient	R_{thJA}		46		
Approximate weight				0.24	g
				0.008	oz.
Marking device		Case style SMC (similar to DO-214AB)		V3J	

Notes

(1) $\frac{dP_{tot}}{dT_J} < \frac{1}{R_{thJA}}$ thermal runaway condition for a diode on its own heatsink

(2) Mounted 1" square PCB

30BQ100

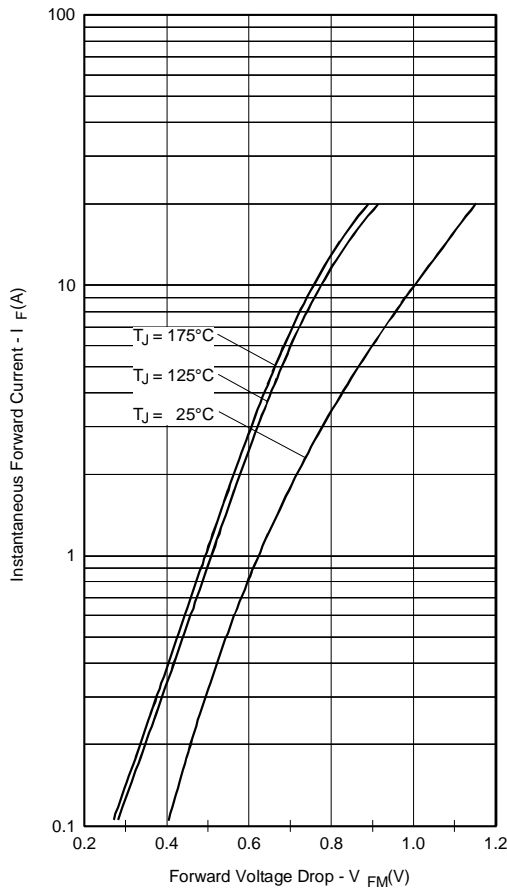


Fig. 1 Max. Forward Voltage Drop Characteristics

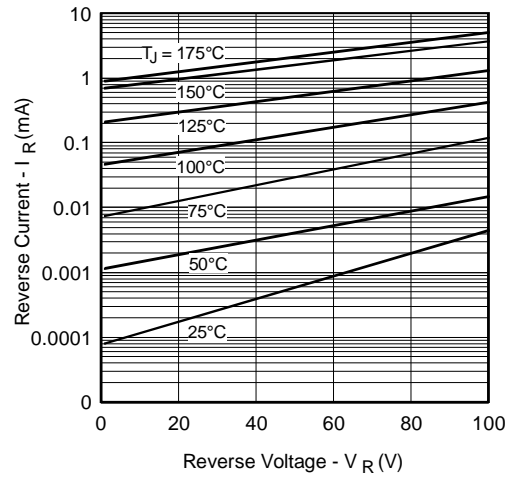


Fig. 2 Typical Values of Reverse Current Vs. Reverse Voltage

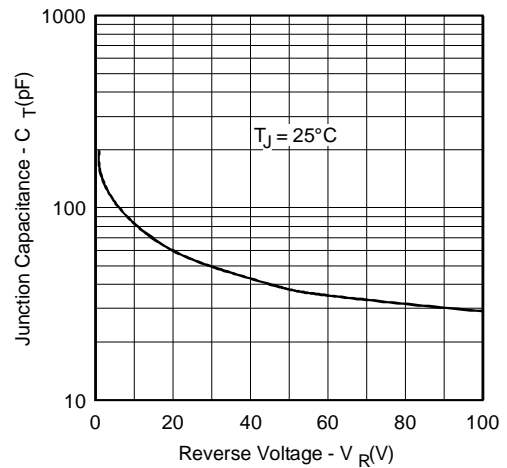


Fig. 3 Typical Junction Capacitance Vs. Reverse Voltage

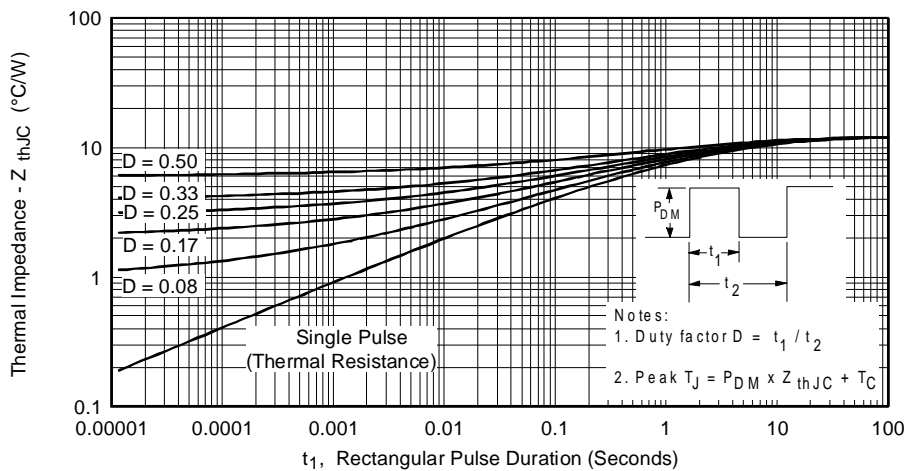


Fig. 4 Max. Thermal Impedance Z_{thJL} Characteristics

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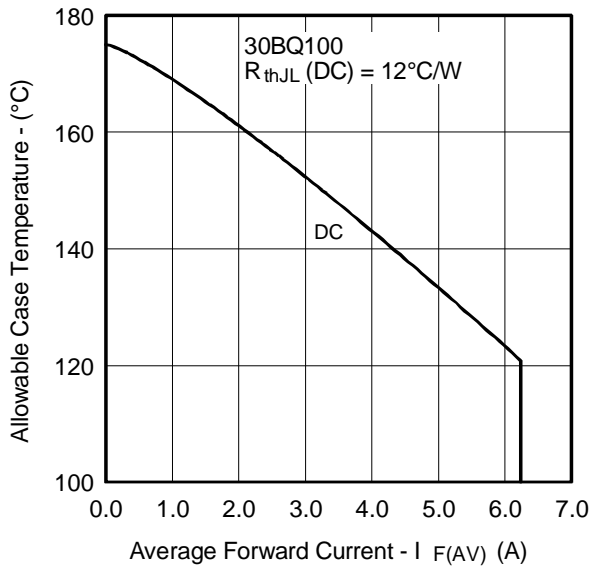


Fig. 5 Max. Allowable Case Temperature Vs. Average Forward Current

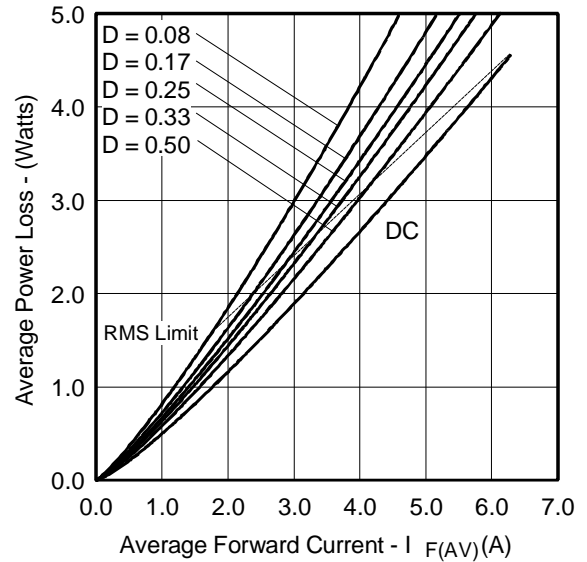


Fig. 6 Forward Power Loss Characteristics

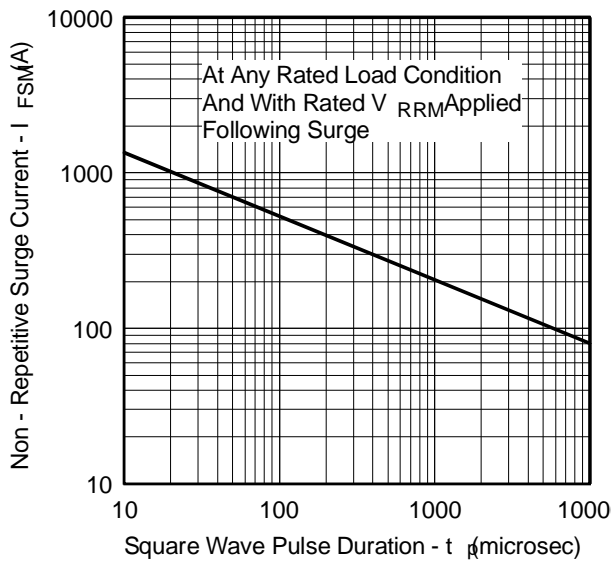


Fig.7 Max. Non-Repetitive Surge Current

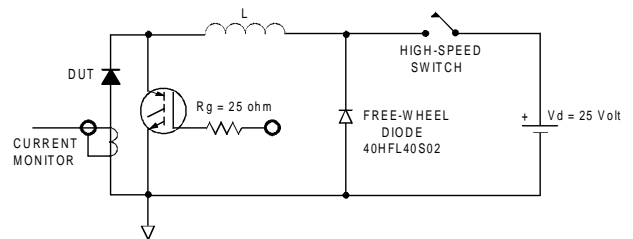


Fig. 8 Unclamped Inductive Test Circuit

Refer to the Appendix Section for the following:
Appendix D: Tape and Reel Information — See page 339.