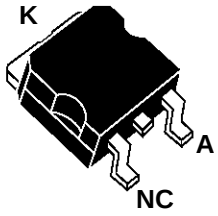
SGS-THOMSON MICROELECTRONICS

BYW77G-200

HIGH EFFICIENCY FAST RECOVERY DIODES

MAIN PRODUCT CHARACTERISTICS

$I_{F(AV)}$	25 A
V_{RRM}	200 V
trr	50 ns
V_F	0.85 V



D^2PAK
(Plastic)

FEATURES AND BENEFITS

- VERY SMALL CONDUCTION LOSSES
- NEGLIGIBLE SWITCHING LOSSES
- LOW FORWARD AND REVERSE RECOVERY TIME
- HIGH SURGE CURRENT CAPABILITY
- SMD PACKAGE

DESCRIPTION

Single rectifier suited for switchmode power supply and high frequency DC to DC converters.
Packaged in D^2PAK, this surface mount device is intended for use in high frequency inverters, free wheeling and polarity protection applications.

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter		Value	Unit
V_{RRM}	Repetitive peak reverse voltage		200	V
$I_{F(RMS)}$	RMS forward current		50	A
$I_{F(AV)}$	Average forward current	Tc=125°C δ = 0.5	25	A
I_{FSM}	Surge non repetitive forward current	tp=10ms sinusoidal	200	A
I_{FRM}	Repetitive peak forward current	tp = 5µs f = 5 kHz	310	A
Tstg Tj	Storage and junction temperature range		- 40 to + 150	°C

THERMAL RESISTANCE

Symbol	Parameter	Value	Unit
Rth (j-c)	Junction to case thermal resistance	1	°C/W

STATIC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
I_R *	Reverse leakage current	$V_R = V_{RRM}$	T_j = 25°C			25	µA
			T_j = 100°C			2.5	mA
V_F **	Forward voltage drop	I_F = 20 A	T_j = 125°C			0.85	V
		I_F = 40 A	T_j = 125°C			1.00	
		I_F = 40 A	T_j = 25°C			1.15	

Pulse test : * tp = 5 ms, duty cycle < 2 %
** tp = 380 µs, duty cycle < 2 %

To evaluate the conduction losses use the following equation :
$P = 0.65 \times I_{F(AV)} + 0.0075\ I_{F^2(RMS)}$

RECOVERY CHARACTERISTICS

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
t_{rr}	Reverse recovery time	T_j = 25°C I_F = 0.5A Irr = 0.25 A I_R = 1A			35	ns
		T_j = 25°C I_F = 1A dI_F/dt = -50A/µs V_R = 30V			50	
t_{fr}	Forward recovery time	T_j = 25°C I_F = 1A dI_F/dt = 100A/µs V_{FR} = 1.1 x V_F max		10		ns
V_{FP}	Peak forward voltage	T_j = 25°C I_F = 1A dI_F/dt = 100A/µs		1.5		V

Fig.1 : Average forward power dissipation versus average forward current.

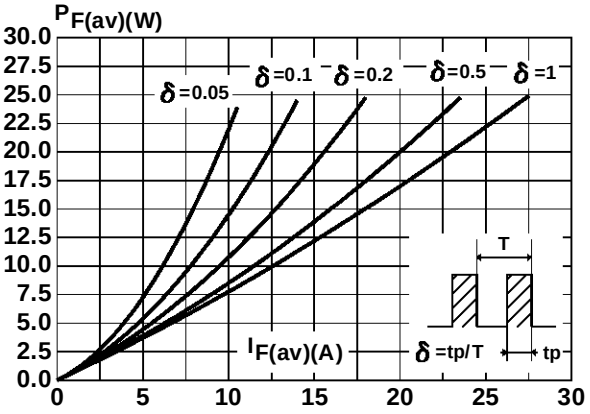


Fig.2 : Peak current versus form factor.

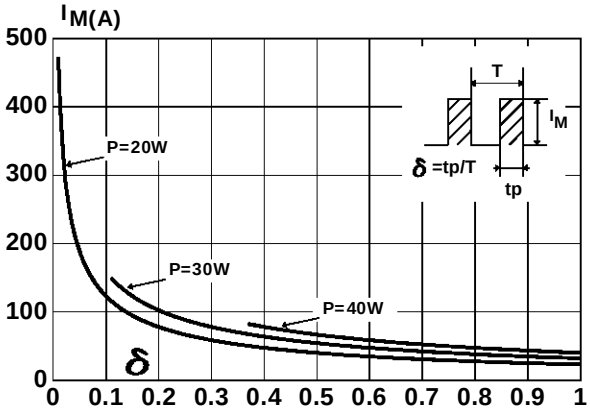


Fig.3 : Forward voltage drop versus forward current (maximum values).

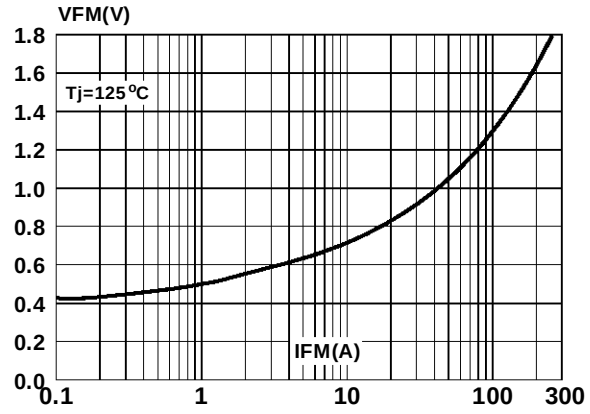


Fig.4 : Relative variation of thermal impedance junction to case versus pulse duration.

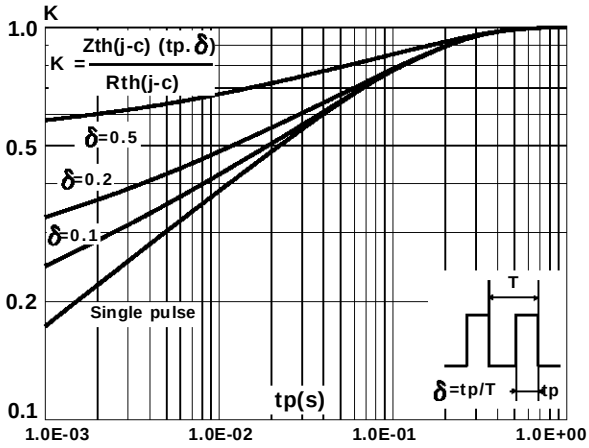


Fig.5 : Non repetitive surge peak forward current versus overload duration.

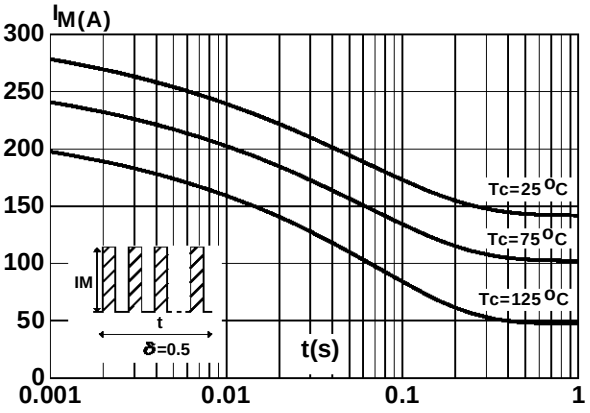


Fig.6 : Average current versus ambient temperature. (δ: 0.5)

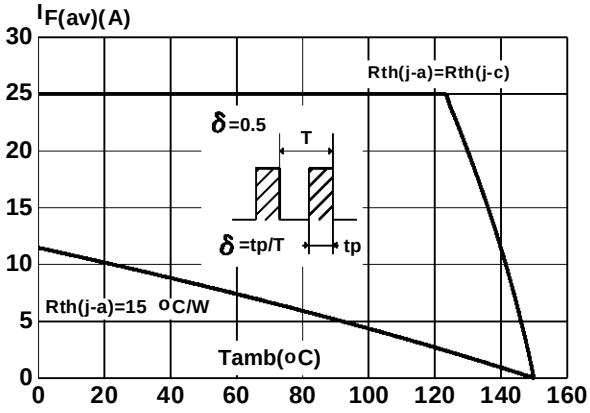


Fig.7 : Junction capacitance versus reverse voltage applied (Typical values).

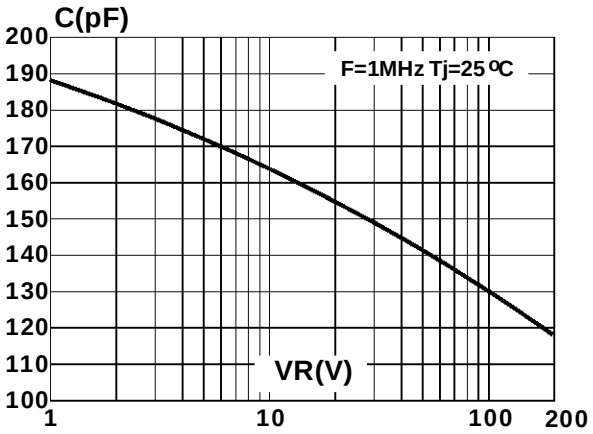


Fig.8 : Reverse recovery charges versus dI_F/dt.

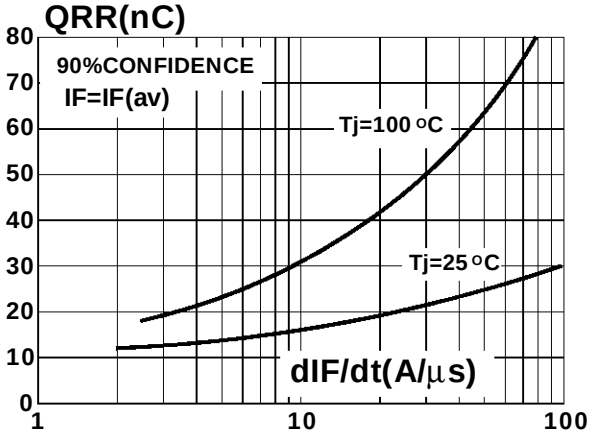


Fig.9 : Peak reverse current versus dIF/dt.

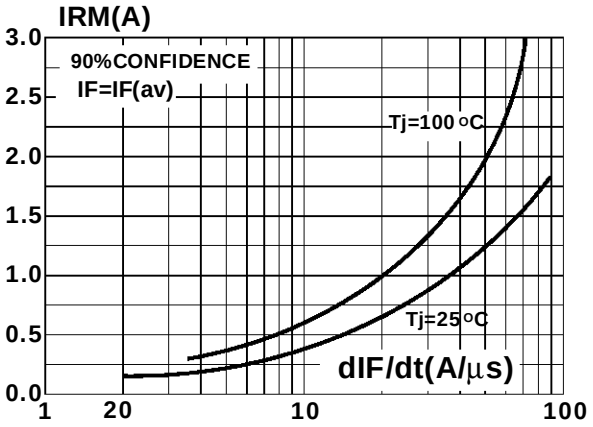
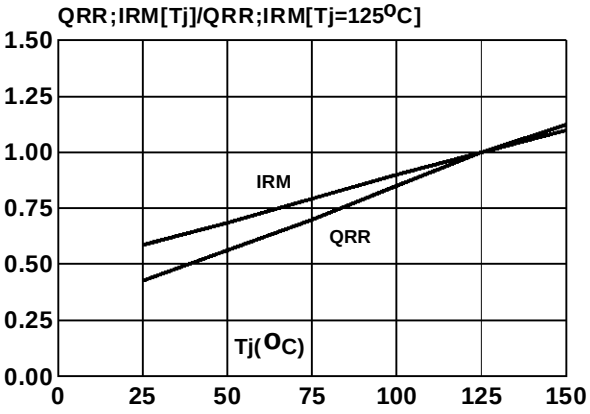
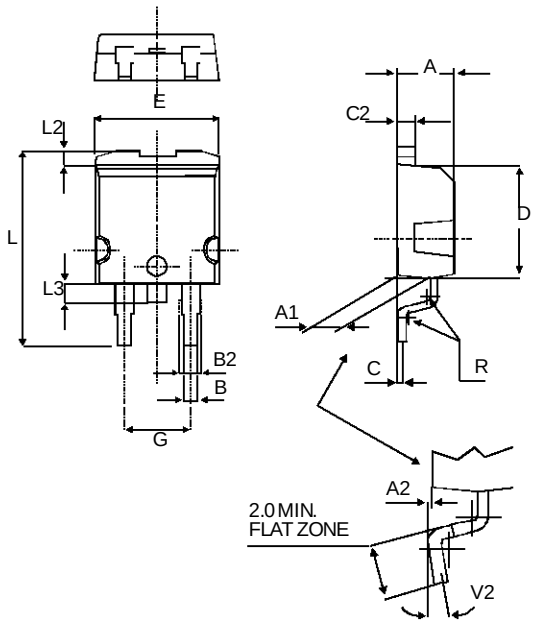


Fig.10 : Dynamic parameters versus junction temperature.



PACKAGE MECHANICAL DATA
D^2PAK (Plastic)



REF.	DIMENSIONS					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.30		4.60	0.169		0.181
A1	2.49		2.69	0.098		0.106
A2	0.03		0.23	0.001		0.009
B	0.70		0.93	0.027		0.037
B2	1.25		1.40	0.049		0.055
C	0.45		0.60	0.017		0.024
C2	1.21		1.36	0.047		0.054
D	9.00		9.35	0.354		0.368
E	10.00		10.28	0.393		0.405
G	4.88		5.28	0.192		0.208
L	15.00		15.85	0.590		0.624
L2	1.27		1.37	0.050		0.054
L3	1.40		1.75	0.055		0.069
R		0.40			0.016	
V2	0°		8°	0°		8°