

**BYW99P/PI/W****THERMAL RESISTANCES**

Symbol	Parameter			Value	Unit
Rth (j-c)	Junction to case	SOT93 / TO247	Per diode	1.8	°C/W
			Total	1.0	
		TOP3I	Per diode	2.0	
			Total	1.25	
Rth (c)	Coupling	SOT93 / TO247		0.2	°C/W
		TOP3I		0.5	

When the diodes 1 and 2 are used simultaneously :

$$T_j - T_c (\text{diode 1}) = P(\text{diode 1}) \times R_{th(j-c)} (\text{Per diode}) + P(\text{diode 2}) \times R_{th(c)}$$

**STATIC ELECTRICAL CHARACTERISTICS (Per diode)**

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
I <sub>R</sub> *	T <sub>j</sub> = 25°C	V <sub>R</sub> = V <sub>RRM</sub>			20	μA
	T <sub>j</sub> = 100°C				1.5	mA
V <sub>F</sub> **	T <sub>j</sub> = 125°C	I <sub>F</sub> = 12 A			0.85	V
	T <sub>j</sub> = 125°C	I <sub>F</sub> = 25 A			1.05	
	T <sub>j</sub> = 25°C	I <sub>F</sub> = 25 A			1.15	

Pulse test : \* tp = 5 ms, δ < 2 %

\*\* tp = 380 μs, δ < 2 %

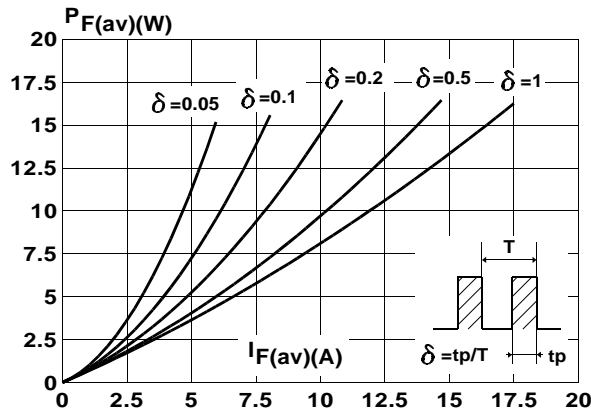
To evaluate the conduction losses use the following equation :

$$P = 0.65 \times I_{F(AV)} + 0.016 \times I_{F(RMS)}^2$$

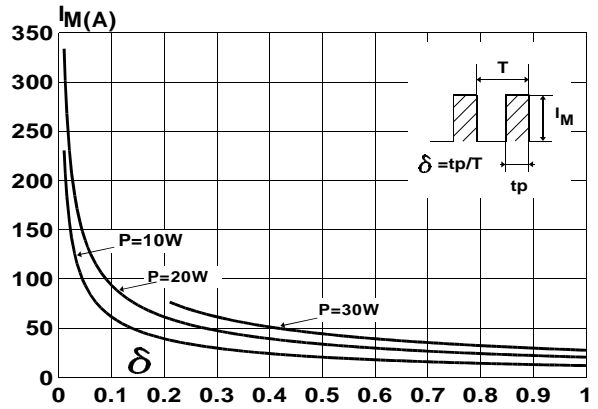
**RECOVERY CHARACTERISTICS**

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
trr	T <sub>j</sub> = 25°C	I <sub>F</sub> = 0.5A I <sub>R</sub> = 1A			25	ns
		I <sub>F</sub> = 1A V <sub>R</sub> = 30V			40	
tfr	T <sub>j</sub> = 25°C	I <sub>F</sub> = 1A V <sub>FR</sub> = 1.1 x V <sub>F</sub>		15		ns
V <sub>FP</sub>	T <sub>j</sub> = 25°C	I <sub>F</sub> = 1A		2		V

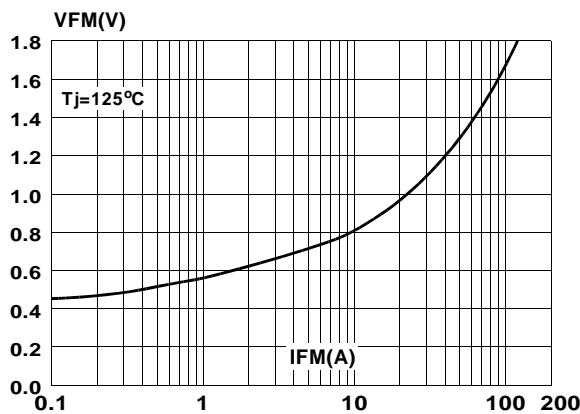
**Fig.1** : Average forward power dissipation versus average forward current.



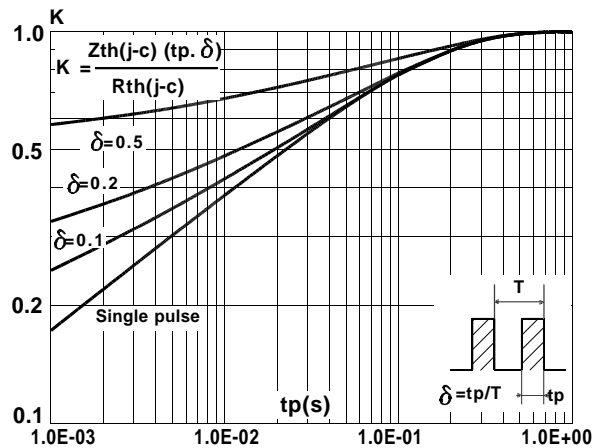
**Fig.2** : Peak current versus form factor.



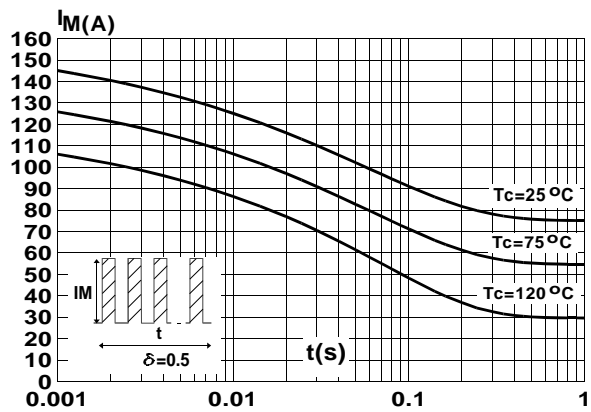
**Fig.3** : Forward voltage drop versus forward current (maximum values).



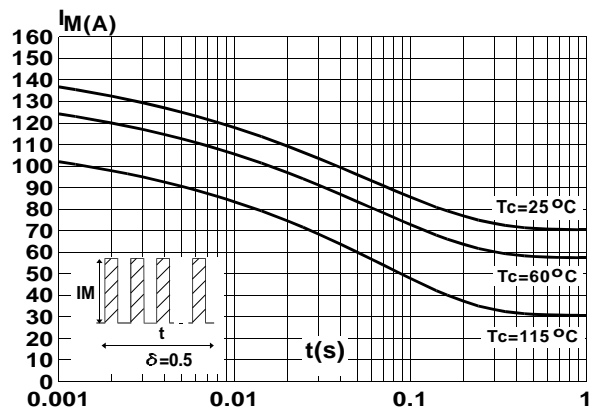
**Fig.4** : Relative variation of thermal impedance junction to case versus pulse duration.



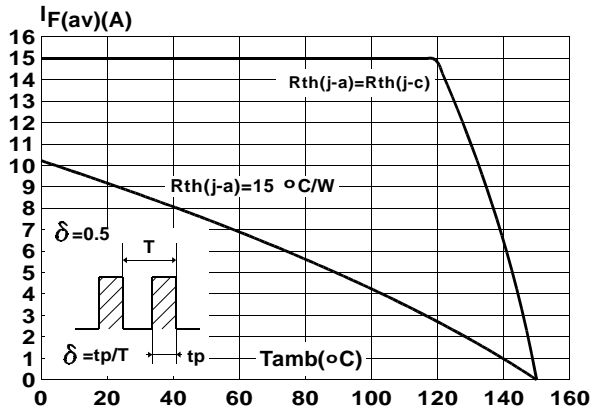
**Fig.5** : Non repetitive surge peak forward current versus overload duration. (SOT93, TO247)



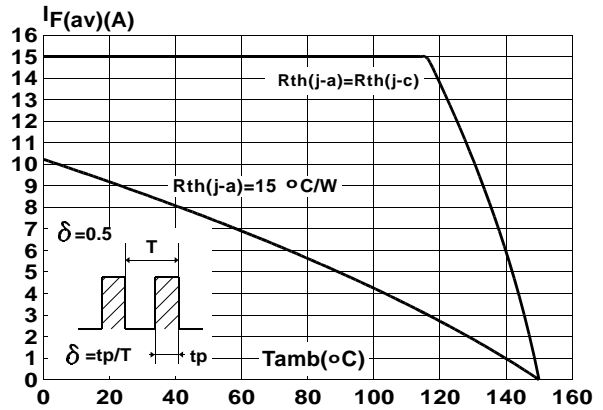
**Fig.6** : Non repetitive surge peak forward current versus overload duration. (TOP3I)



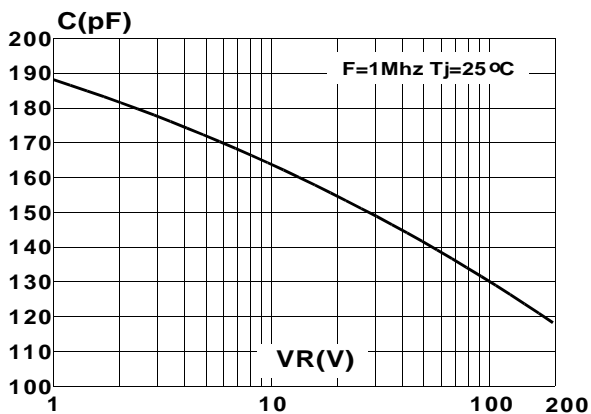
**Fig.7** : Average current versus ambient temperature.  
( $\delta = 0.5$ ) (SOT93, TO247)



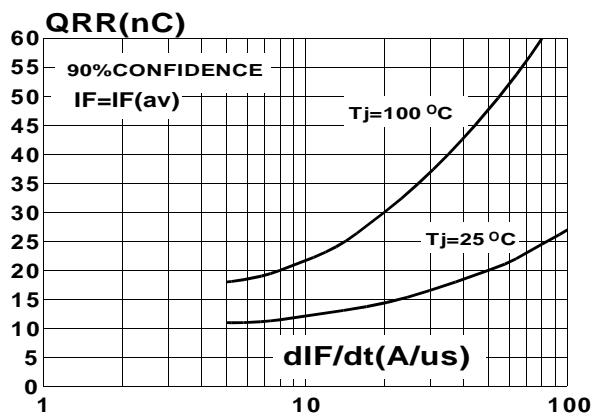
**Fig.8** : Average current versus ambient temperature.  
( $\delta = 0.5$ ) (TOP3I)



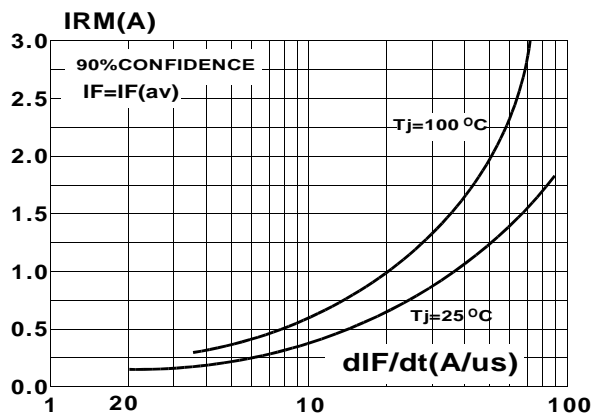
**Fig.9** : Junction capacitance versus reverse voltage applied (Typical values).



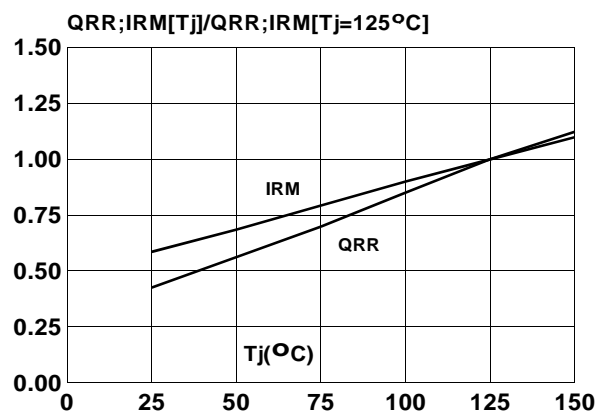
**Fig.10** : Recovery charges versus  $dI_F/dt$ .



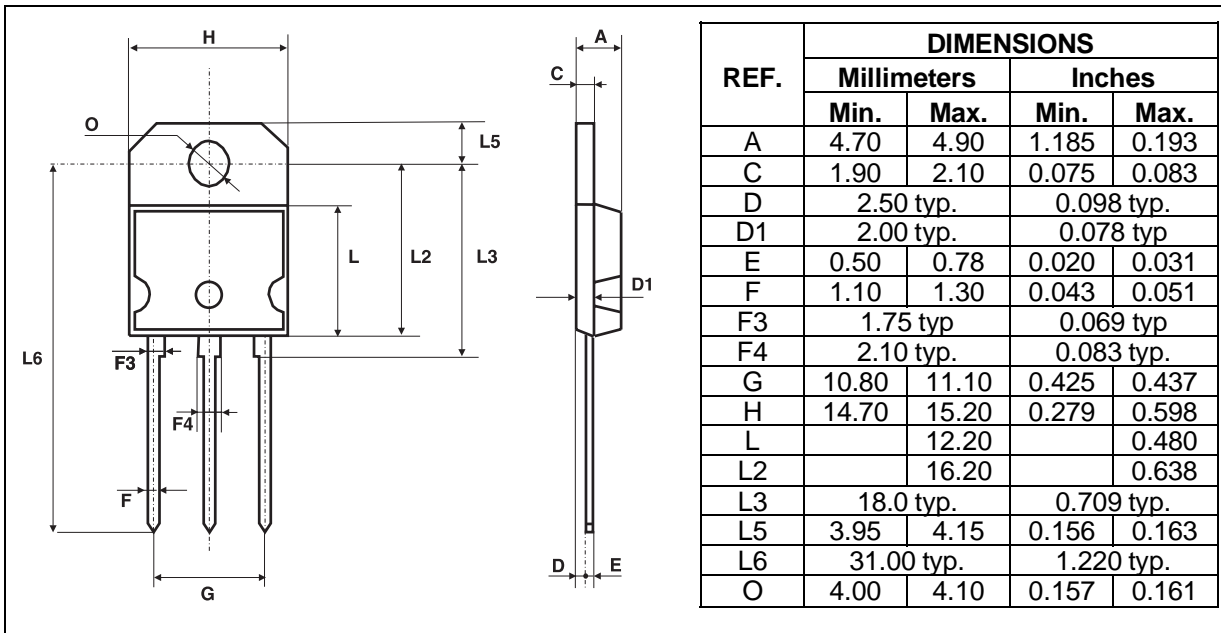
**Fig.11** : Peak reverse current versus  $dI_F/dt$ .



**Fig.12** : Dynamic parameters versus junction temperature.

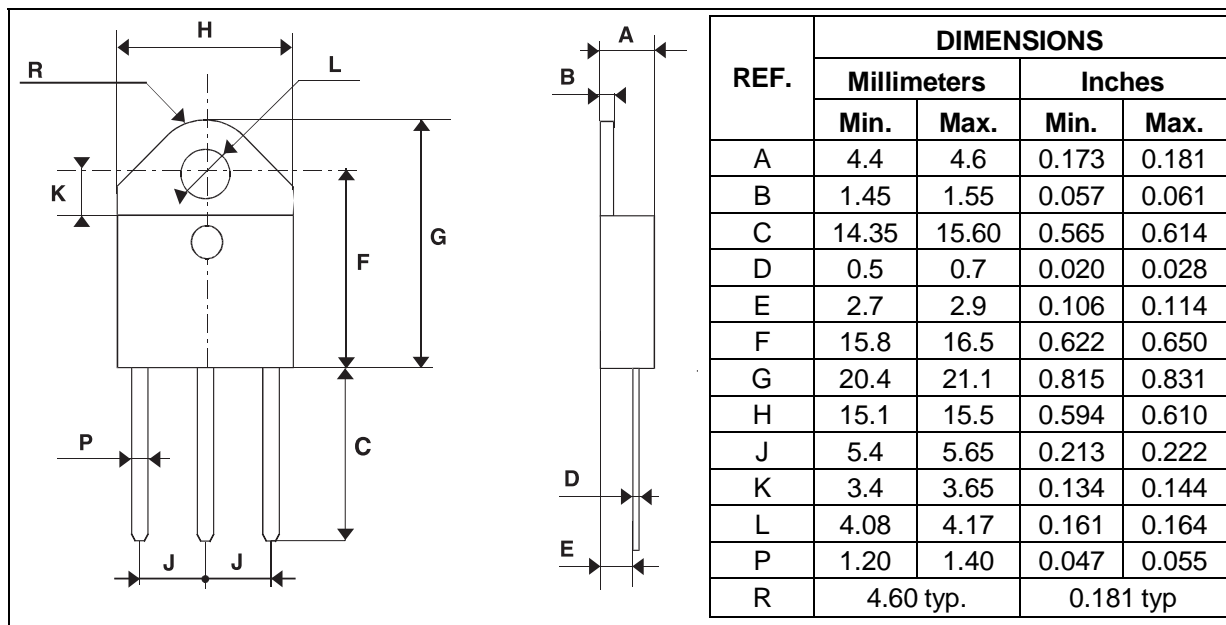


**PACKAGE MECHANICAL DATA**  
SOT93



- **Marking** : Type number
- **Cooling method** : C
- **Weight** : 5.3 g
- **Recommended torque value** : 0.8m.N
- **Maximum torque value** : 1.0m.N

**PACKAGE MECHANICAL DATA**  
TOP3I (isolated)

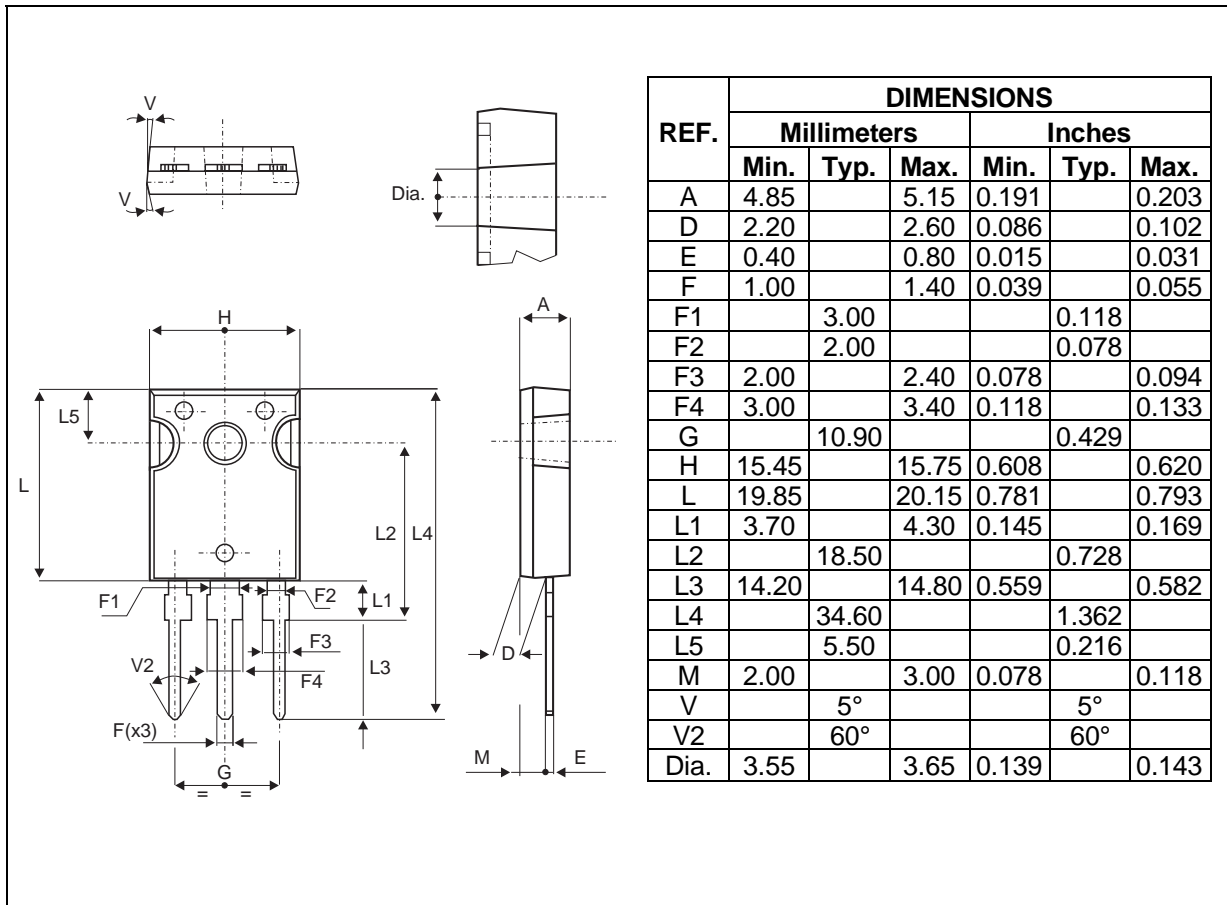


- **Marking** : Type number
- **Cooling method** : C
- **Weight** : 4.7 g
- **Recommended torque value** : 0.8m.N
- **Maximum torque value** : 1.0m.N



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## PACKAGE MECHANICAL DATA TO247



- **Marking** : Type number
- **Cooling method** : C
- **Weight** : 4.4 g
- **Recommended torque value** : 0.8m.N
- **Maximum torque value** : 1.0m.N

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