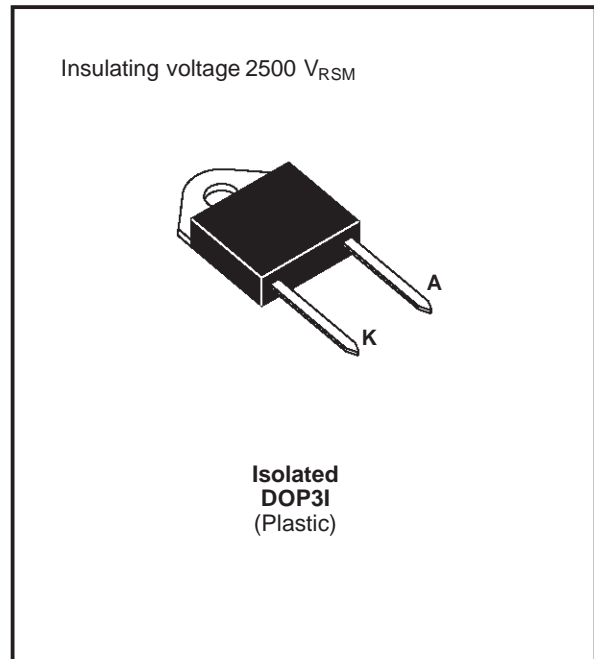


## FAST RECOVERY RECTIFIER DIODE

- VERY HIGH REVERSE VOLTAGE CAPABILITY
- VERY LOW REVERSE RECOVERY TIME
- VERY LOW SWITCHING LOSSES
- LOW NOISE TURN-OFF SWITCHING
- INSULATED: Capacitance 15pF



### SUITABLE APPLICATIONS

- FREE WHEELING DIODE IN CONVERTERS AND MOTOR CONTROL CIRCUITS
- RECTIFIER IN S.M.P.S.

### ABSOLUTE MAXIMUM RATINGS (limiting values)

Symbol	Parameter		Value	Unit
V <sub>RRM</sub>	Repetitive Peak Reverse Voltage		1000	V
V <sub>RSM</sub>	Non Repetitive Peak Reverse Voltage		1000	V
I <sub>FRM</sub>	Repetive Peak Forward Current	t <sub>p</sub> ≤ 10μs	375	A
I <sub>F (RMS)</sub>	RMS Forward Current		70	A
I <sub>F (AV)</sub>	Average Forward Current	T <sub>c</sub> = 50°C δ = 0.5	30	A
I <sub>FSM</sub>	Surge non Repetitive Forward Current	t <sub>p</sub> = 10ms Sinusoidal	200	A
P	Power Dissipation	T <sub>c</sub> = 50°C	60	W
T <sub>stg</sub> T <sub>j</sub>	Storage and Junction Temperature Range		- 40 to +150	°C

### THERMAL RESISTANCE

Symbol	Parameter	Value	Unit
R <sub>th (j-c)</sub>	Junction-case	1.6	°C/W

**ELECTRICAL CHARACTERISTICS**

STATIC CHARACTERISTICS

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>			100	μA
	T <sub>j</sub> = 100°C				5	mA
V <sub>F</sub>	T <sub>j</sub> = 25°C	I <sub>F</sub> = 30A			1.9	V
	T <sub>j</sub> = 100°C				1.8	

RECOVERY CHARACTERISTICS

Symbol	Test Conditions			Min.	Typ.	Max.	Unit
t <sub>rr</sub>	T <sub>j</sub> = 25°C	I <sub>F</sub> = 1A	di <sub>F</sub> /dt = - 15A/μs	V <sub>R</sub> = 30V		165	ns
		I <sub>F</sub> = 0.5A	I <sub>R</sub> = 1A		I <sub>rr</sub> = 0.25A		

TURN-OFF SWITCHING CHARACTERISTICS (Without Series Inductance)

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
t <sub>IRM</sub>	di <sub>F</sub> /dt = - 120A/μs	V <sub>CC</sub> = 200 V I <sub>F</sub> = 30A L <sub>p</sub> ≤ 0.05μH T <sub>j</sub> = 100°C See figure 11			200	ns
	di <sub>F</sub> /dt = - 240A/μs			120		
I <sub>RM</sub>	di <sub>F</sub> /dt = -120A/μs				19.5	A
	di <sub>F</sub> /dt = - 240A/μs			22		

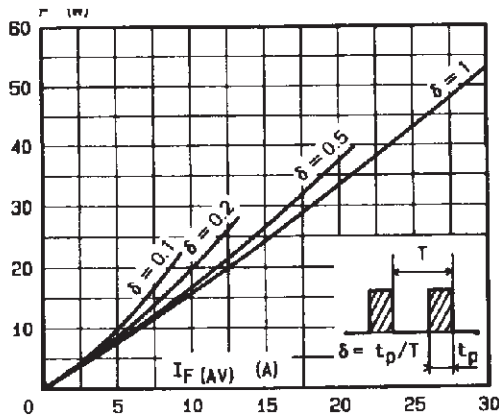
TURN-OFF OVERVOLTAGE COEFFICIENT (With Series Inductance)

Symbol	Test Conditions			Min.	Typ.	Max.	Unit
$C = \frac{V_{RP}}{V_{CC}}$	T <sub>j</sub> = 100°C	V <sub>CC</sub> = 200V	I <sub>F</sub> = I <sub>F(AV)</sub>			4.5	
	di <sub>F</sub> /dt = - 30A/μs	L <sub>p</sub> = 5μH	See figure 12				

To evaluate the conduction losses use the following equations:

$$V_F = 1.47 + 0.010 I_F \quad P = 1.47 \times I_{F(AV)} + 0.010 I_{F(RMS)}^2$$

**Figure 1. Low frequency power losses versus average current**



**Figure 2. Peak current versus form factor**

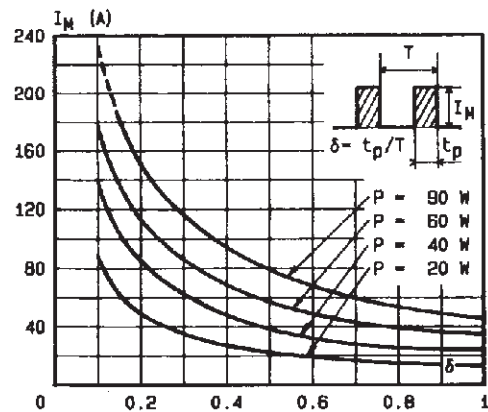


Figure 3. Non repetitive peak surge current versus overload duration

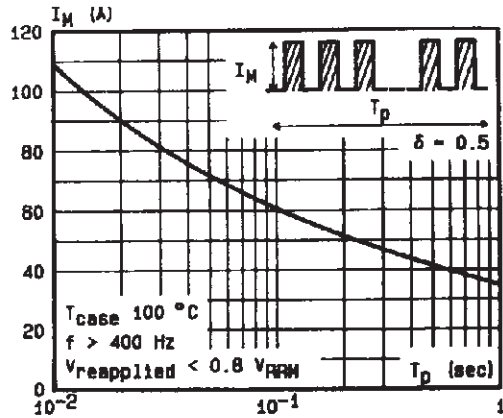


Figure 4. Thermal impedance versus pulse width

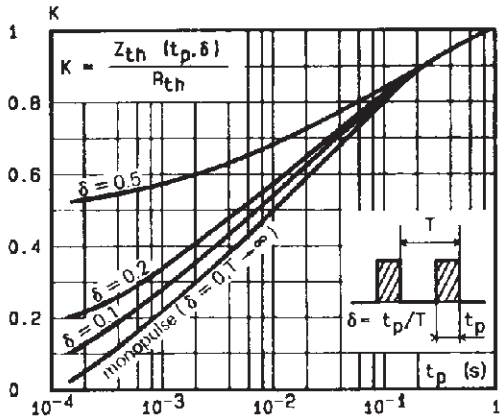


Figure 5. Voltage drop versus forward current

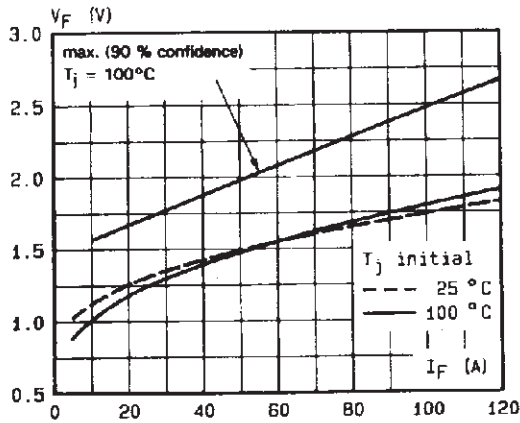


Figure 6. Recovery charge versus di\_F/dt

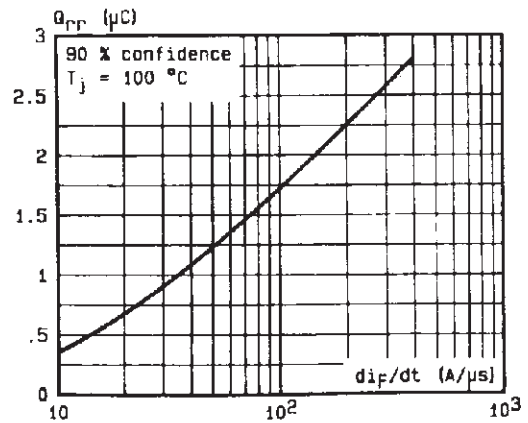


Figure 7. Recovery time versus di\_F/dt

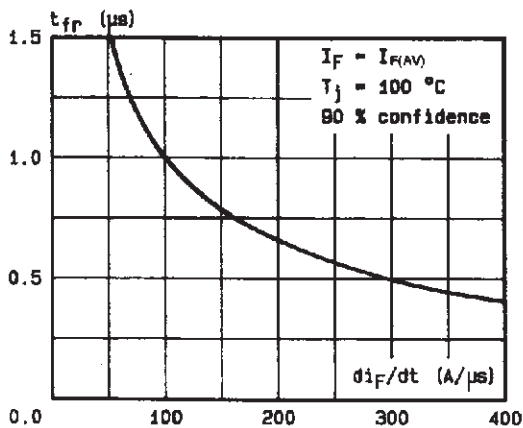


Figure 8. Peak reverse current versus di\_F/dt

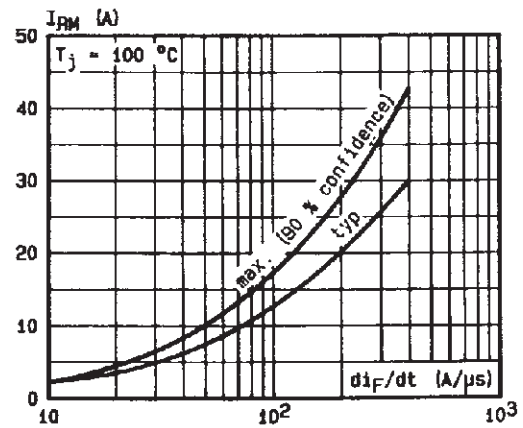


Figure 9. Peak forward voltage versus  $di_F/dt$ .

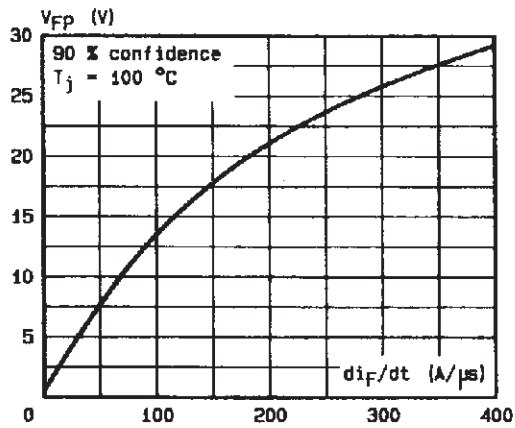


Figure 10. Dynamic parameters versus junction temperature.

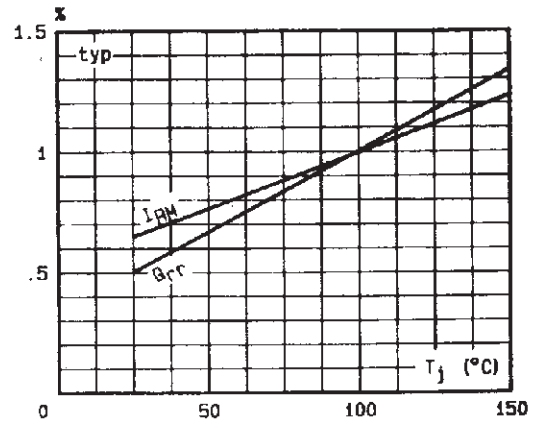


Figure 11. Turn-off switching characteristics (without series inductance).

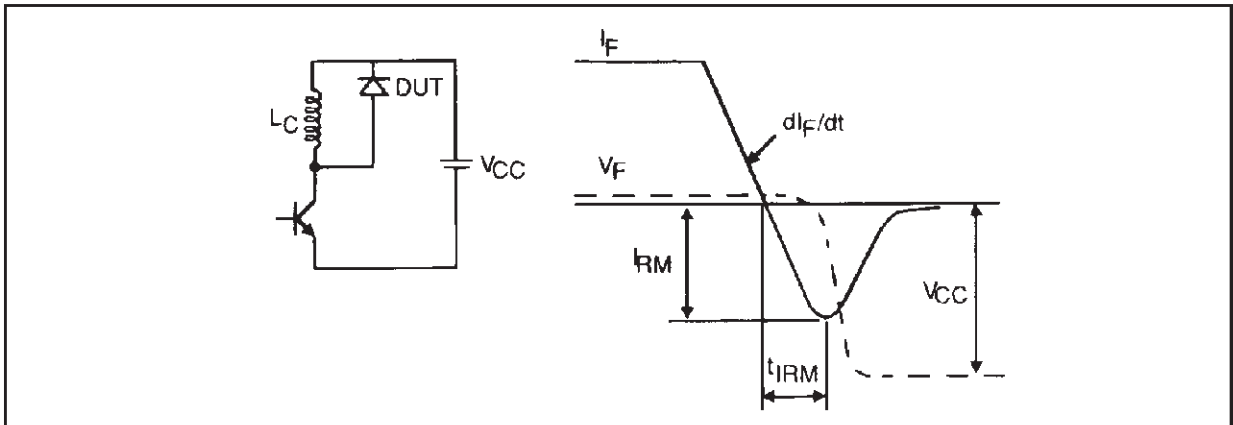
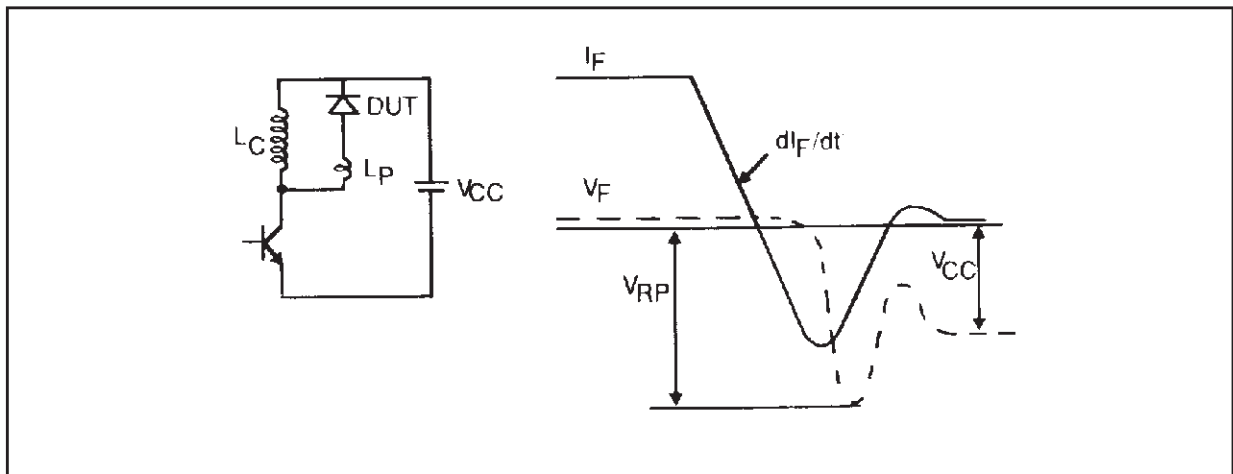
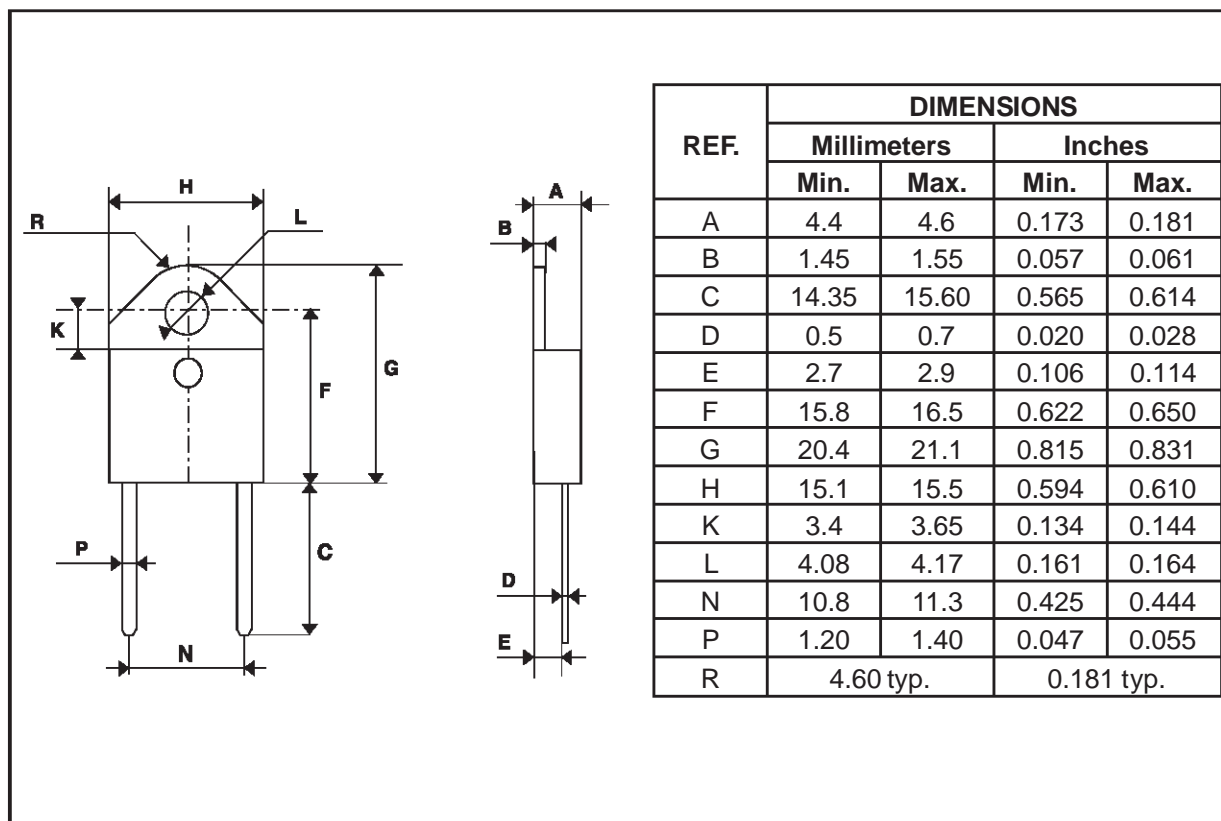


Figure 12. Turn-off switching characteristics (with series inductance)



## PACKAGE MECHANICAL DATA : Isolated DOP3I Plastic



Cooling method: by conduction (method C)  
 Marking: type number  
 Weight: 18.84g  
 Recommended torque value: 250cm. N  
 Maximum torque value: 310cm. N

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