

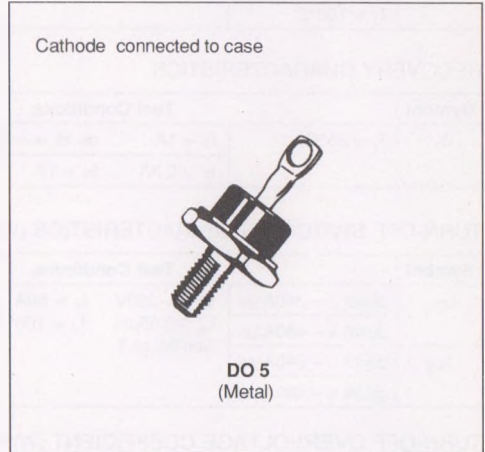
FAST RECOVERY RECTIFIER DIODE

FEATURES

- VERY HIGH REVERSE VOLTAGE CAPABILITY
- VERY LOW REVERSE RECOVERY TIME
- VERY LOW SWITCHING LOSSES
- LOW NOISE TURN-OFF SWITCHING

SUITABLE APPLICATIONS

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



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter		Value	Unit
V_{RRM}	Repetitive Peak Reverse Voltage		1000	V
V_{RSM}	Non Repetitive Peak Reverse Voltage		1000	V
I_{FRM}	Repetitive Peak Forward Current	$t_p \leq 10\mu s$	750	A
$I_{F(RMS)}$	RMS Forward Current		140	A
$I_{F(AV)}$	Average Forward Current	$T_{case} = 50^\circ C$ $\delta = 0.5$	60	A
I_{FSM}	Surge Non Repetitive Forward Current	$t_p = 10ms$ Sinusoidal	400	A
P	Power Dissipation	$T_{case} = 50^\circ C$	125	W
T_{stg} T_j	Storage and Junction Temperature Range		- 40 to + 150	$^\circ C$

THERMAL RESISTANCE

Symbol	Parameter	Value	Unit
$R_{th(j-c)}$	Junction-case	0.8	$^\circ C/W$

ELECTRICAL CHARACTERISTICS

STATIC CHARACTERISTICS

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
I _R	T _j = 25°C	V _R = V _{RRM}			100	μA
	T _j = 100°C				6	mA
V _F	T _j = 25°C	I _F = 60A			1.9	V
	T _j = 100°C				1.8	

RECOVERY CHARACTERISTICS

Symbol	Test Conditions			Min.	Typ.	Max.	Unit
t _{rr}	T _j = 25°C	I _F = 1A	di _F /dt = -15A/μs	V _R = 30V		170	ns
		I _F = 0.5A	I _R = 1A	I _{rr} = 0.25A		70	

TURN-OFF SWITCHING CHARACTERISTICS (Without Series Inductance)

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
t _{IRM}	di _F /dt = -240A/μs	V _{CC} = 200V I _F = 60A L _p ≤ 0.05μH T _j = 100°C See figure 1			200	ns
	di _F /dt = -480A/μs			120		
I _{RM}	di _F /dt = -240A/μs				40	A
	di _F /dt = -480A/μs			44		

TURN-OFF OVERVOLTAGE COEFFICIENT (With Series Inductance)

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
$C = \frac{V_{RP}}{V_{CC}}$	T _j = 100°C	V _{CC} = 200V I _F = I _{F(AV)}		3.3	4.5	
	di _F /dt = -60A/μs	L _p = 2.5μH See figure 2				

To evaluate the conduction losses use the following equation :

$$V_F = 1.47 + 0.005 I_F \quad P = 1.47 \times I_{F(AV)} + 0.005 I_F^2 (RMS)$$

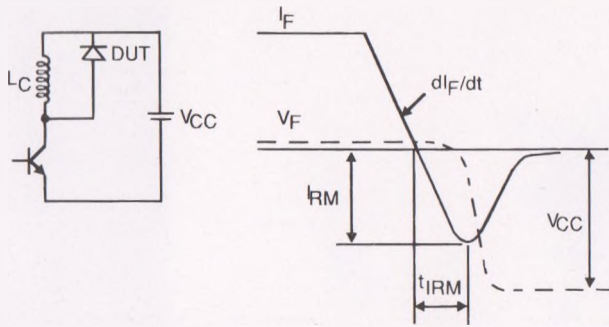


Figure 1 : Turn-off switching characteristics (without series inductance).

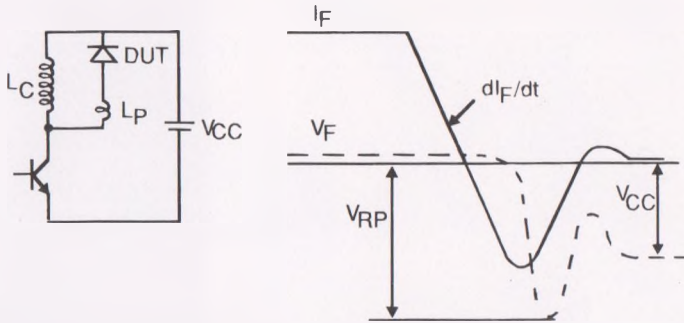


Figure 2 : Turn-off switching characteristics (without series inductance).