



MF35

Fast Recovery Diode

Replaces March 1998 version, DS4625-3.1

DSDS4625-4.0 January 2000

APPLICATIONS

- Inverse, Parallel Or Series Connected Diode
- Power Supplies
- High Frequency Applications

FEATURES

- Glass Passivation
- High Voltage Capability
- Fast Recovery Characteristics

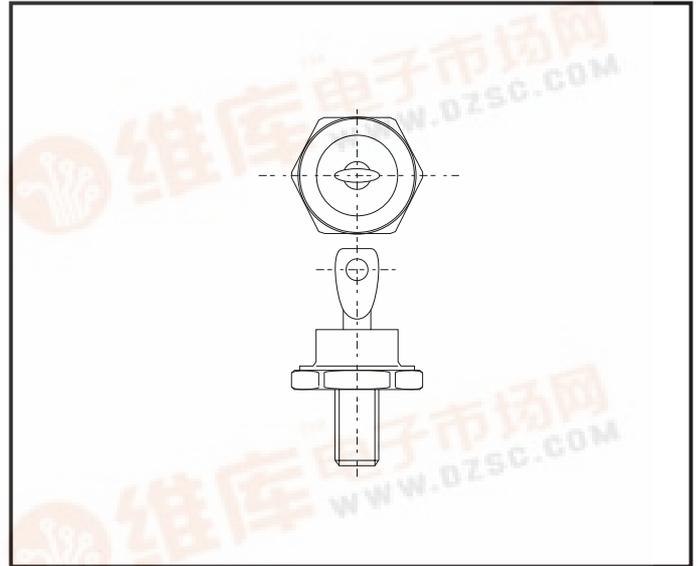
KEY PARAMETERS

V_{RRM}	1200V
$I_{F(AV)}$	40A
I_{FSM}	400A
Q_r	10 μ C
t_{rr}	0.2ns

VOLTAGE RATINGS

Type Number	Repetitive Peak Reverse Voltage V_{RRM} V	Conditions
MF35 - 1200	1200	$V_{RSM} = V_{RRM} + 100V$
MF35 - 1000	1000	
MF35 - 800	800	
MF35 - 600	600	

Lower voltage grades available.
For stud anode add suffix 'R' to type number. e.g. MF35-1200R.



Outline type code: DO5.
See Package Details for further information.

CURRENT RATINGS

Symbol	Parameter	Conditions	Max.	Units
$I_{F(AV)}$	Mean forward current	Half sine wave resistive load, $T_{case} = 65^\circ C$	40	A
$I_{F(RMS)}$	RMS value	$T_{case} = 65^\circ C$	63	A
I_F	Continuous (direct) forward current	$T_{case} = 65^\circ C$	50	A

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SURGE RATINGS

Symbol	Parameter	Conditions	Max.	Units
I_{FSM}	Surge (non-repetitive) forward current	10ms half sine; with $V_{RRM} \leq 10V$, $T_j = 125^\circ C$	400	A
I^2t	I^2t for fusing	10ms half sine; $T_j = 125^\circ C$	800	A ² s

THERMAL AND MECHANICAL DATA

Symbol	Parameter	Conditions	Min.	Max.	Units
$R_{th(j-c)}$	Thermal resistance - junction to case	dc	-	0.8	$^\circ C/W$
$R_{th(c-h)}$	Thermal resistance - case to heatsink	Mounting torque 3.5Nm with mounting compound	-	0.2	$^\circ C/W$
T_{vj}	Virtual junction temperature	Forward (conducting)	-	125	$^\circ C$
		Reverse (blocking)	-	125	$^\circ C$
T_{stg}	Storage temperature range		-55	125	$^\circ C$
-	Mounting torque		3.2	3.8	Nm

CHARACTERISTICS

Symbol	Parameter	Conditions	Typ.	Max.	Units
V_{FM}	Forward voltage	At 120A peak, $T_{case} = 25^\circ C$	-	2.0	V
I_{RM}	Peak reverse current	At V_{RRM} , $T_{case} = 100^\circ C$	-	5	mA
t_{rr}	Reverse recovery time	$I_F = 1A$, $di_{RR}/dt = 25A/\mu s$, $T_{case} = 25^\circ C$, $V_R = 100V$	-	200	ns
Q_R	Recovered charge	$I_F = 50A$, $di_{RR}/dt = 50A/\mu s$, $T_{case} = 25^\circ C$, $V_R = 100V$	-	10	μC
V_{TO}	Threshold voltage	At $T_{vj} = 125^\circ C$	-	1.2	V
r_T	Slope resistance	At $T_{vj} = 125^\circ C$	-	7.0	m Ω

CURVES

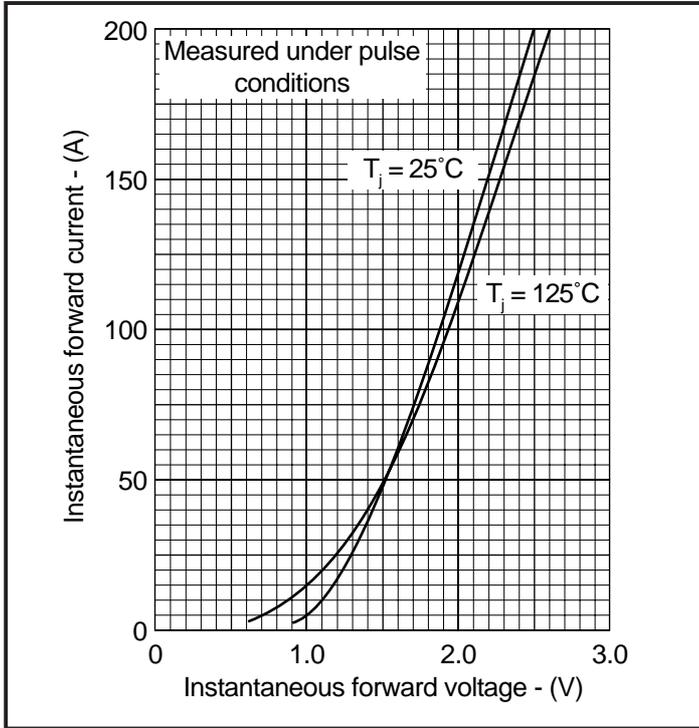


Fig.1 Maximum (limit) forward characteristics

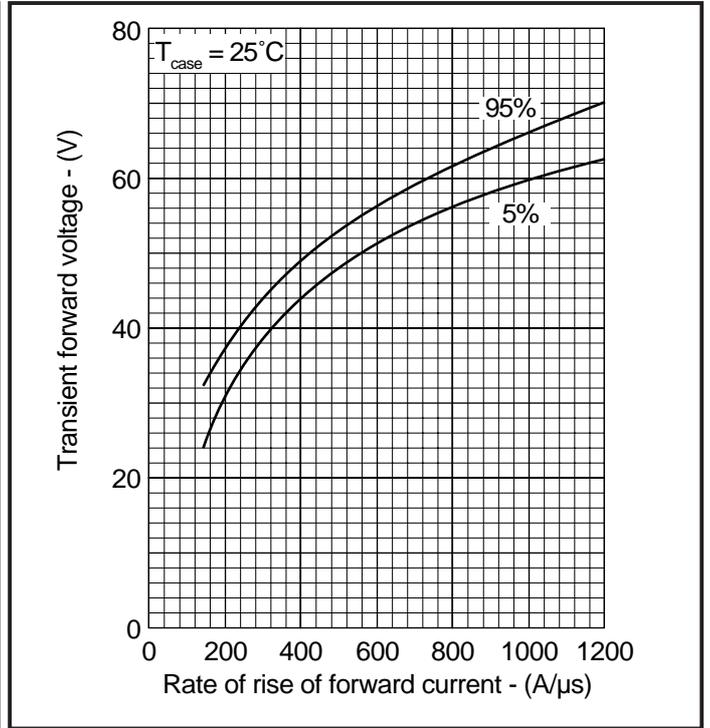


Fig.2 Forward recovery voltage vs rate of rise of forward voltage

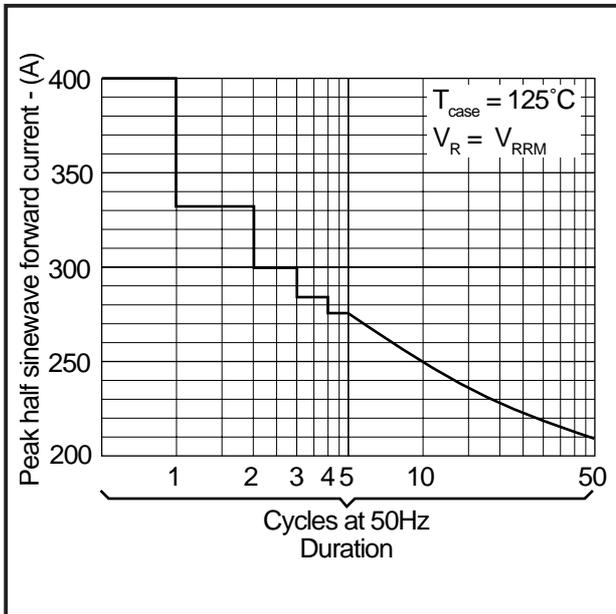


Fig.3 Surge (non-repetitive) forward current vs time

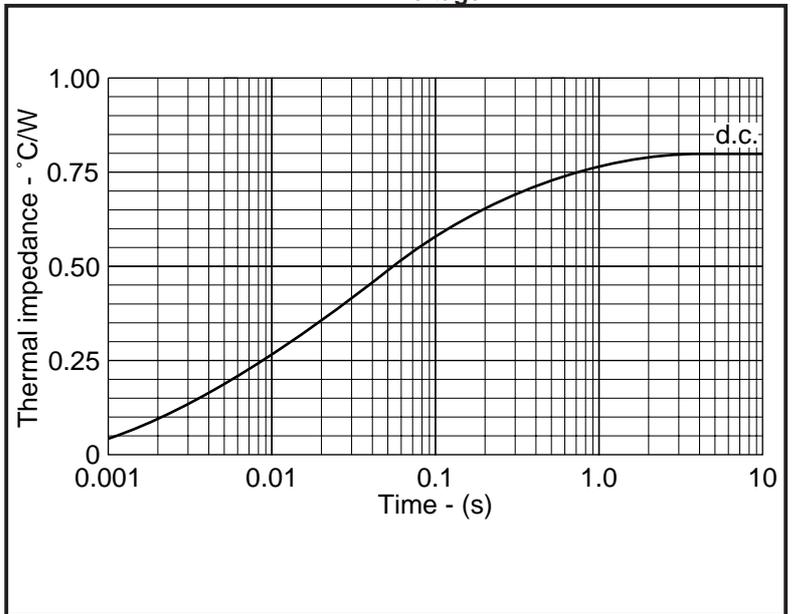


Fig.4 Maximum transient thermal impedance

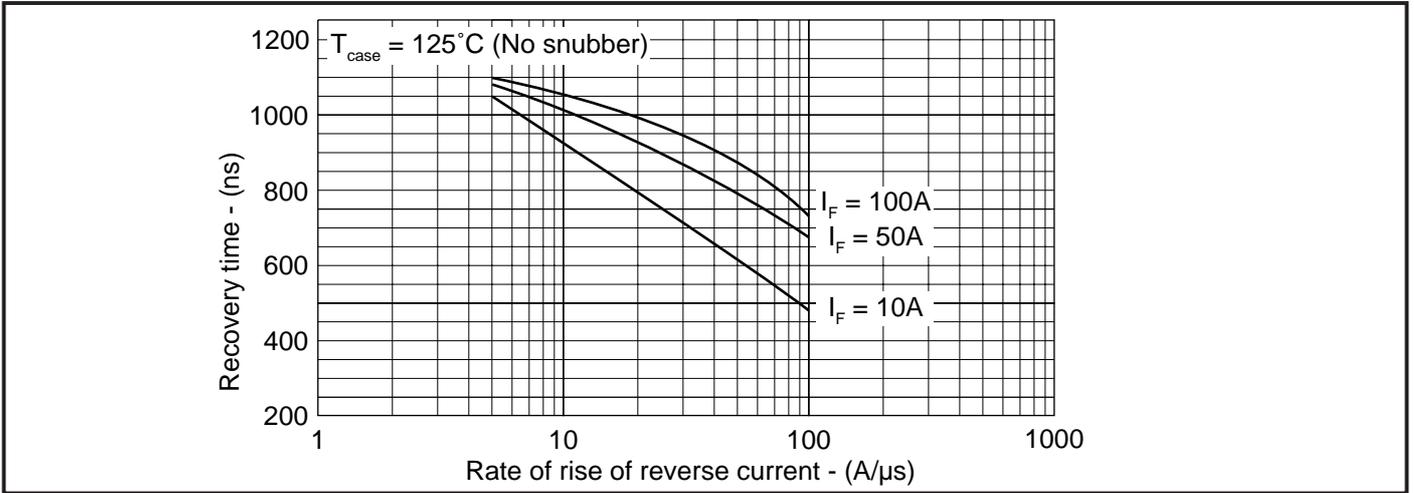


Fig.5 Recovery time vs di_R/dt

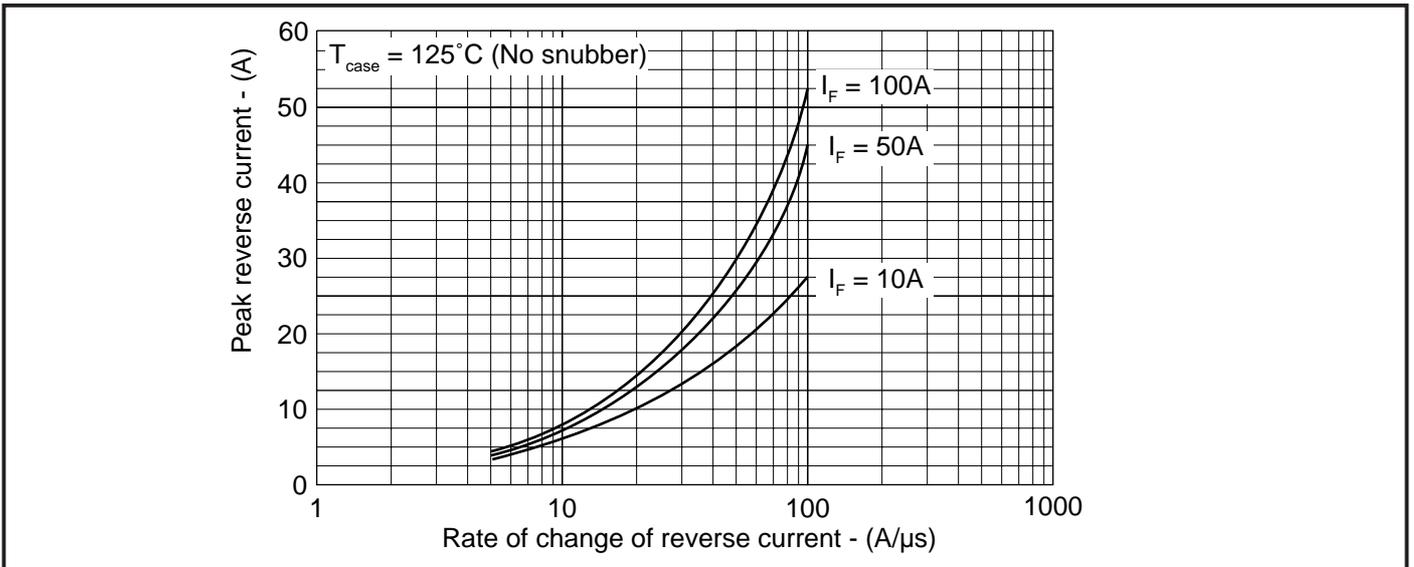


Fig.6 Peak reverse current vs di_R/dt

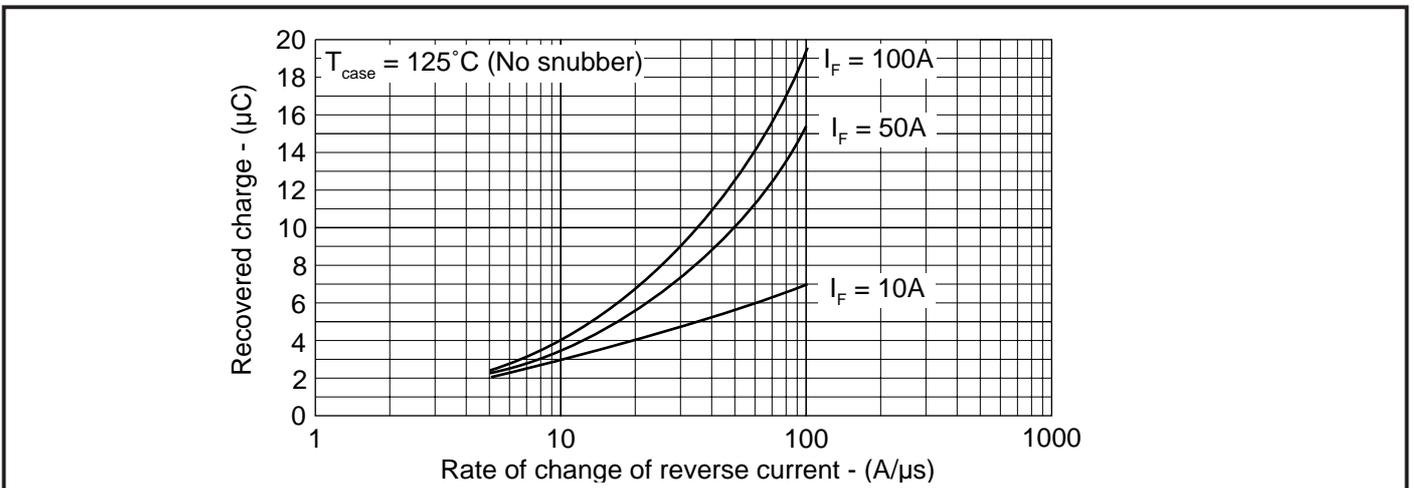


Fig.7 Recovered charge vs di_R/dt

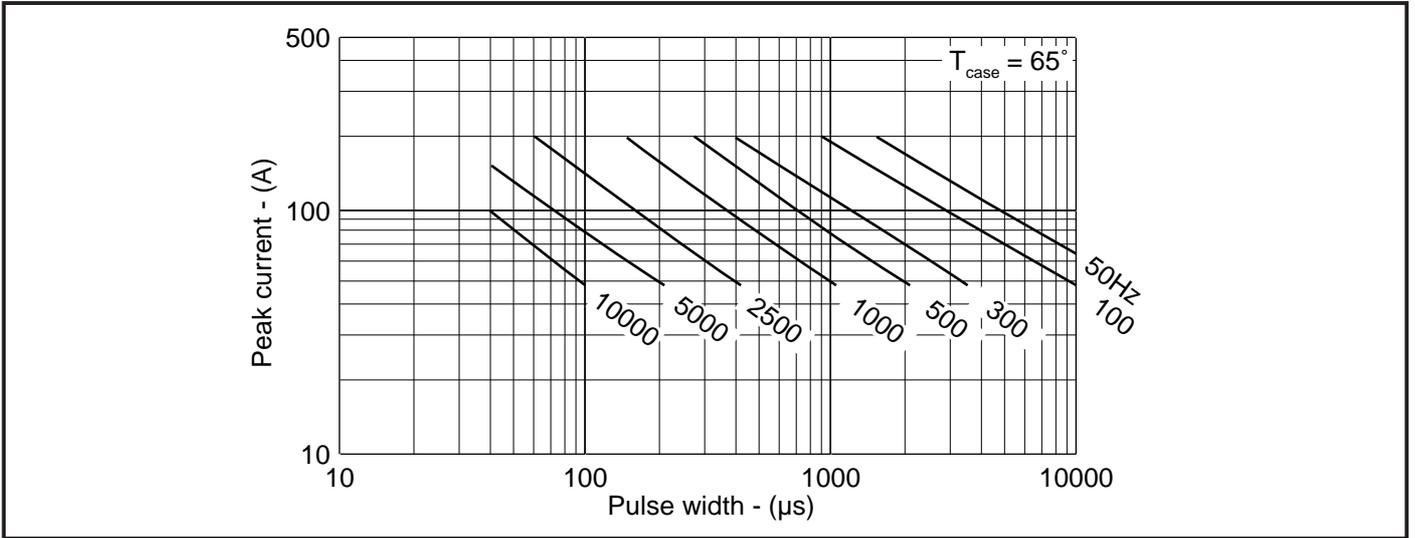


Fig.8 Frequency curves - square waveform

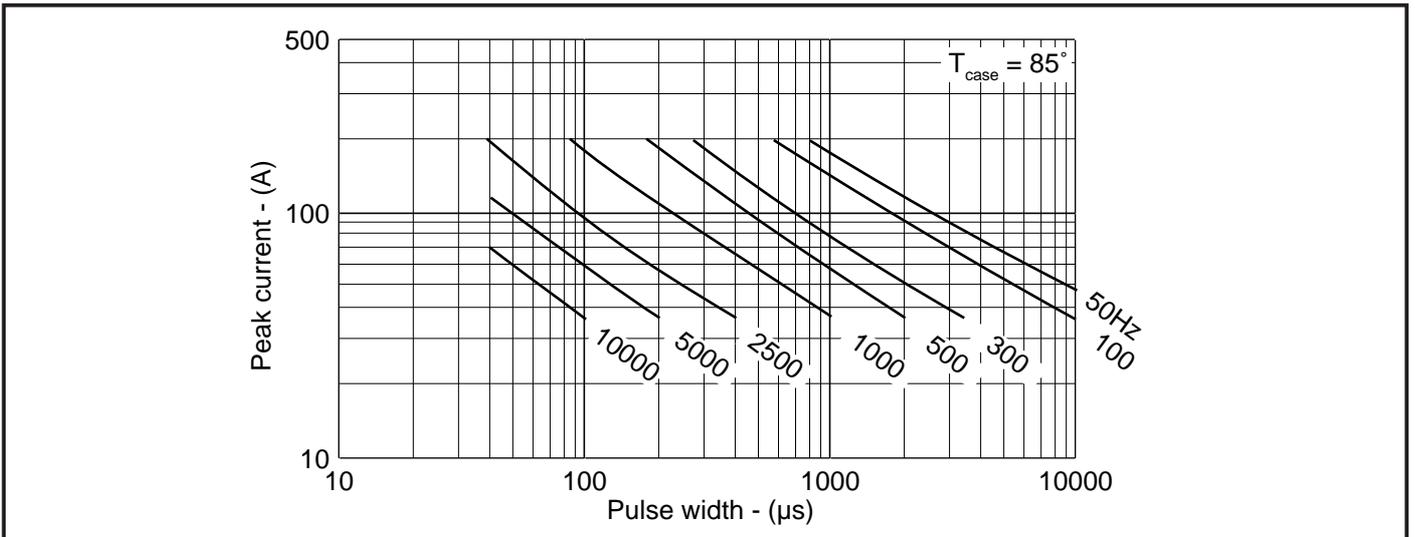


Fig.9 Frequency curves - square waveform

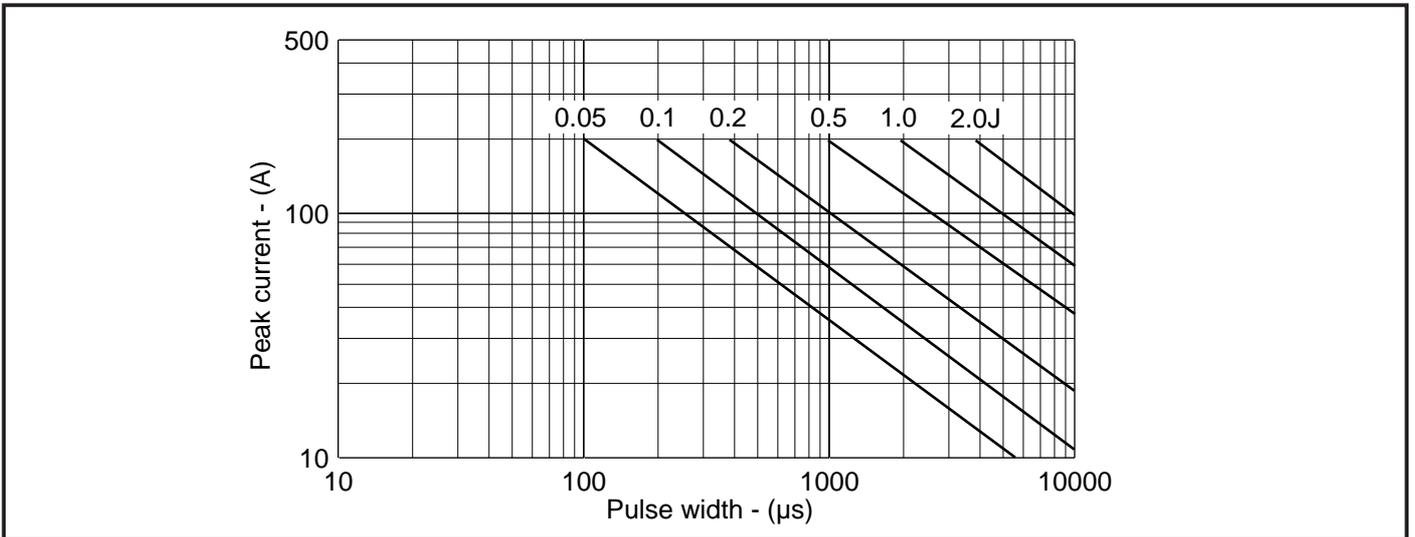
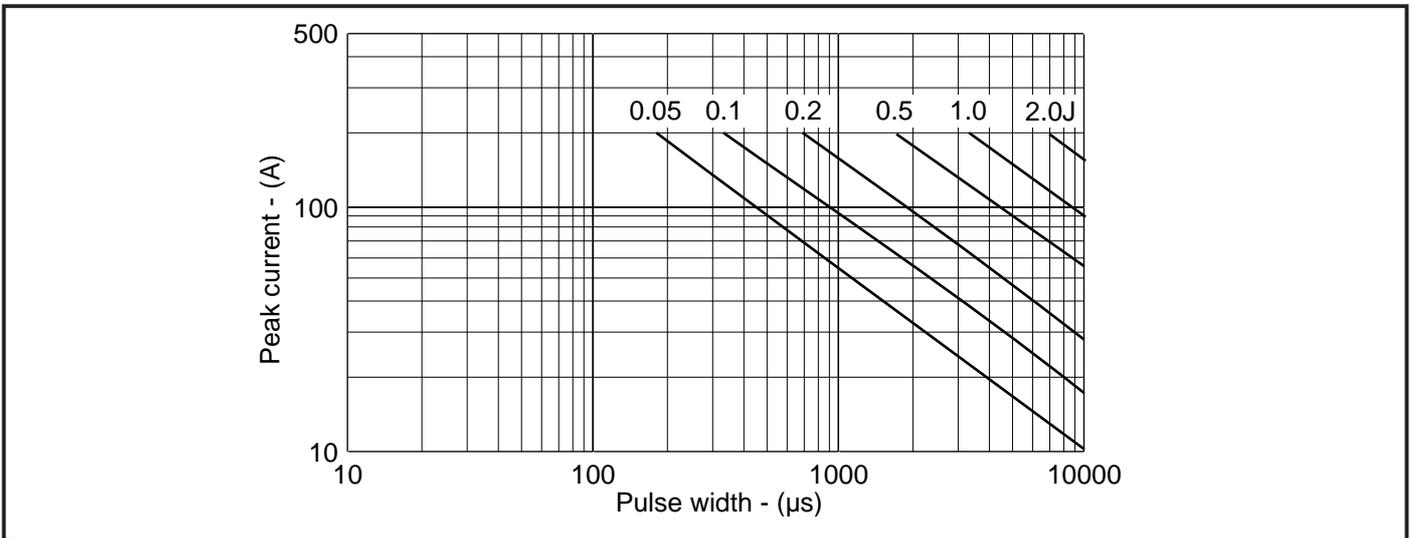
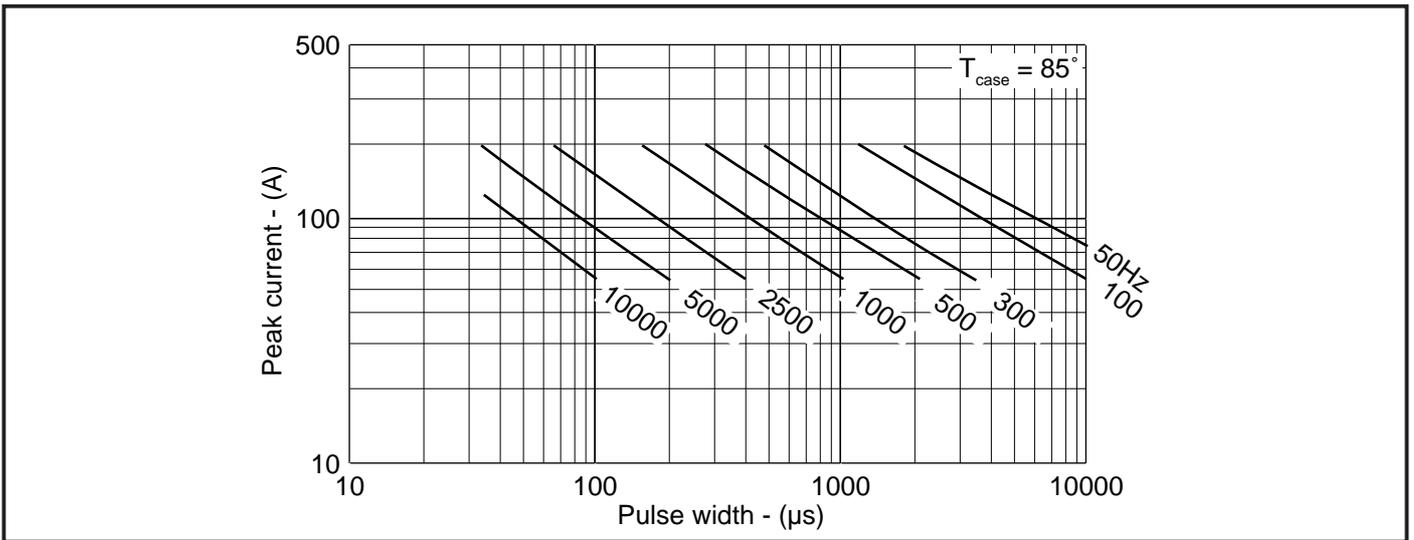
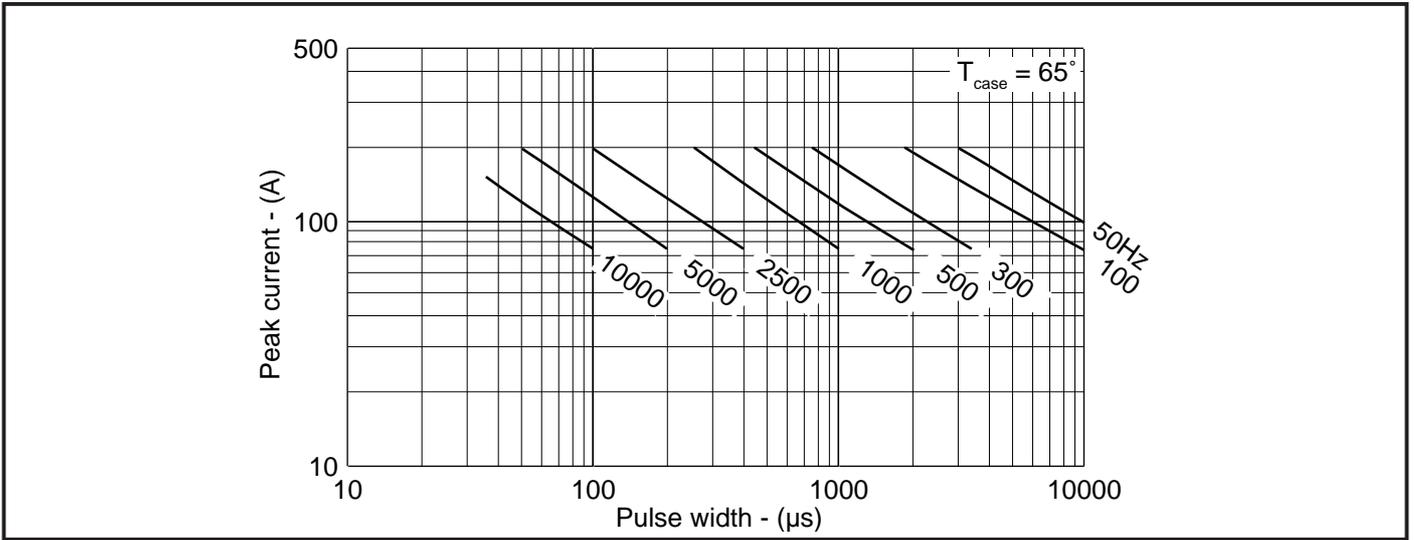
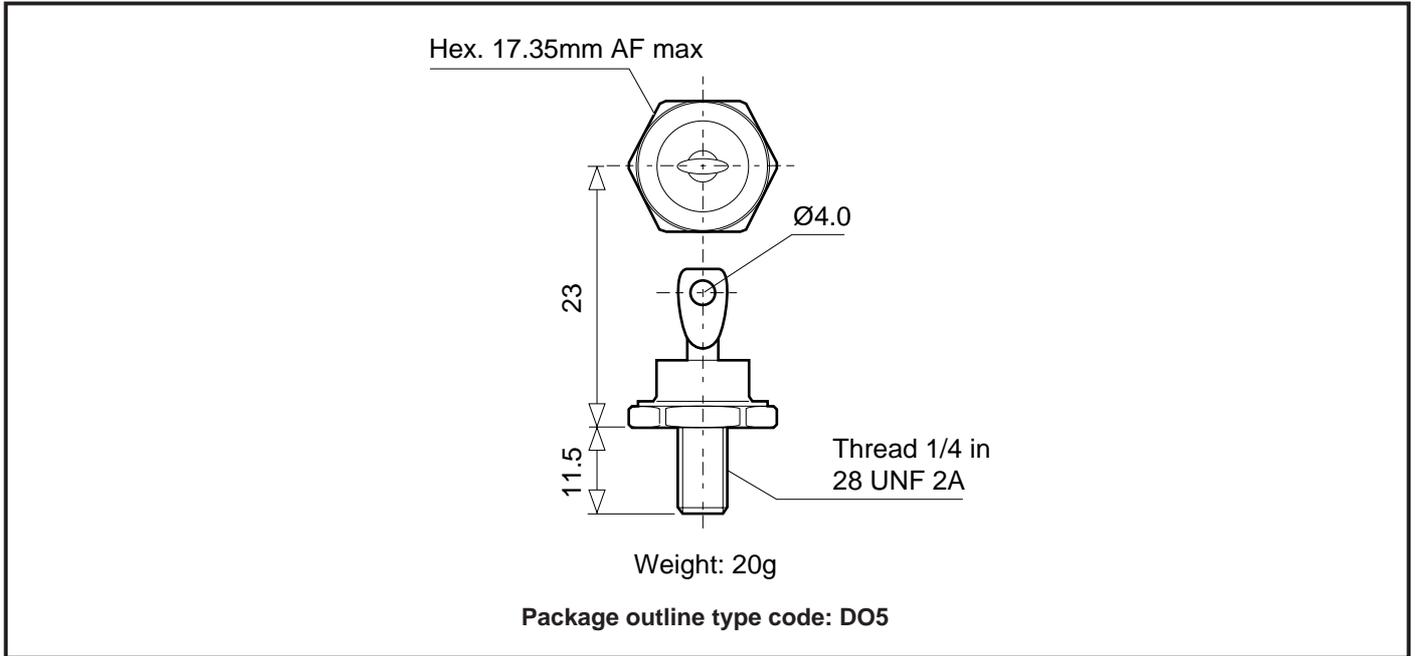


Fig.10 Energy per pulse - square waveform



PACKAGE DETAILS

For further package information, please contact your local Customer Service Centre. All dimensions in mm, unless stated otherwise. DO NOT SCALE.



ASSOCIATED PUBLICATIONS

Title	Application Note Number
Calculating the junction temperature or power semiconductors	AN4506
Thyristor and diode measurement with a multi-meter	AN4853
Use of V_{TO} , r_T on-state characteristic	AN5001

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POWER ASSEMBLY CAPABILITY

The Power Assembly group was set up to provide a support service for those customers requiring more than the basic semiconductor, and has developed a flexible range of heatsink / clamping systems in line with advances in device types and the voltage and current capability of our semiconductors.

We offer an extensive range of air and liquid cooled assemblies covering the full range of circuit designs in general use today. The Assembly group continues to offer high quality engineering support dedicated to designing new units to satisfy the growing needs of our customers.

Using the up to date CAD methods our team of design and applications engineers aim to provide the Power Assembly Complete solution (PACs).

HEATSINKS

Power Assembly has its own proprietary range of extruded aluminium heatsinks. They have been designed to optimise the performance of our semiconductors. Data with respect to air natural, forced air and liquid cooling (with flow rates) is available on request.

For further information on device clamps, heatsinks and assemblies, please contact your nearest Sales Representative or the factory.



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