



**FAST RECOVERY RECTIFIER DIODES**

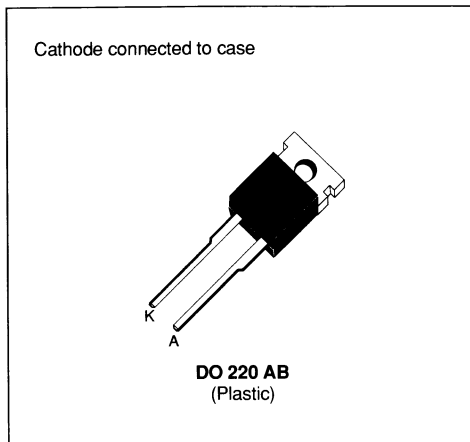
- HIGH VOLTAGE CAPABILITY
- FAST AND SOFT RECOVERY
- THE SPECIFICATIONS AND CURVES ENABLE THE DETERMINATION OF THE  $t_{rr}$  AND  $I_{RM}$  AT 100°C UNDER USERS CONDITIONS

**APPLICATIONS**

- MOTOR CONTROLS AND CONVERTERS
- SWITCHMODE POWER SUPPLIES

**DESCRIPTION**

Fast recovery rectifiers suited for applications in combination with superswitch transistors



**ABSOLUTE RATINGS** (limiting values)

Symbol	Parameter		Value	Unit
$I_{FRM}$	Repetitive Peak Forward Current	$t_p \leq 20\mu s$	120	A
$I_F (RMS)$	RMS Forward Current		16	A
$I_F (AV)$	Average Forward Current	$T_C = 100^\circ C$ $\delta = 0.5$	10	A
$I_{FSM}$	Surge non Repetitive Forward Current	$t_p = 10ms$ Sinusoidal	120	A
$P_{tot}$	Power Dissipation	$T_C = 100^\circ C$	20	W
$T_{stg}$ $T_J$	Storage and Junction Temperature Range		- 40 to 150	°C

Symbol	Parameter	ESM 765-					Unit
		100 A	200 A	400 A	600 A	800 A	
$V_{RRM}$	Repetitive Peak Reverse Voltage	100	200	400	600	800	V
$V_{RSM}$	Non Repetitive Peak Reverse Voltage	100	200	400	600	800	V

**THERMAL RESISTANCE**

Symbol	Parameter	Value	Unit
$R_{th(j-c)}$	Junction-case	3.5	°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>			20	μA
	T <sub>j</sub> = 100°C				1	mA
V <sub>F</sub>	T <sub>j</sub> = 25°C	I <sub>F</sub> = 10A			1.4	V
	T <sub>j</sub> = 100°C				1.35	

**RECOVERY CHARACTERISTICS**

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
t <sub>rr</sub>	T <sub>j</sub> = 25°C V <sub>R</sub> = 30V	I <sub>F</sub> = 1A di <sub>F</sub> /dt = - 15A/μs			300	ns
Q <sub>rr</sub>	T <sub>j</sub> = 25°C V <sub>R</sub> = 200V	I <sub>F</sub> = 10A di <sub>F</sub> /dt = - 50A/μs		2.3		μC

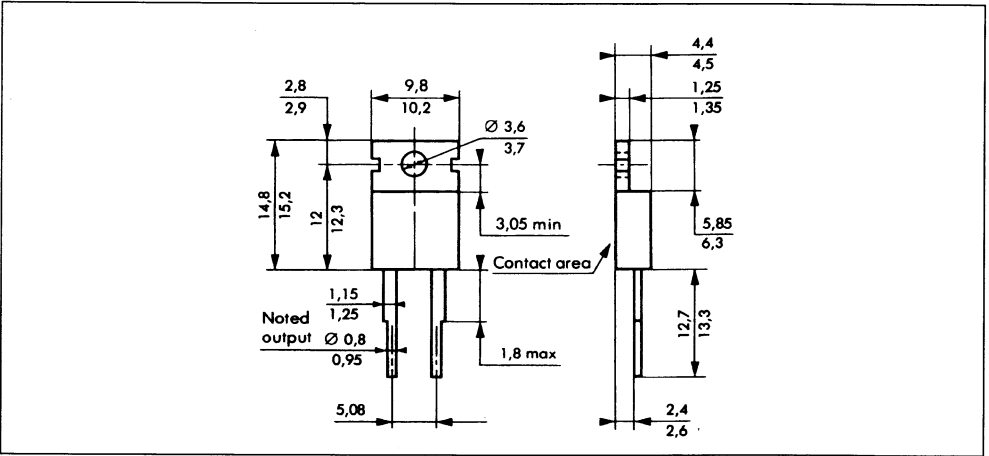
To evaluate the conduction losses use the following equations :

$V_F = 1.2 + 0.015 I_F$

$P = 1.2 \times I_{F(AV)} + 0.015 I_F^2 (RMS)$

**PACKAGE MECHANICAL DATA**

DO 220 AB Plastic



Cooling method : by conduction (method C)

Marking : type number

Weight : 2.4g

Recommended torque value : 80cm. N

Maximum torque value : 100cm. N

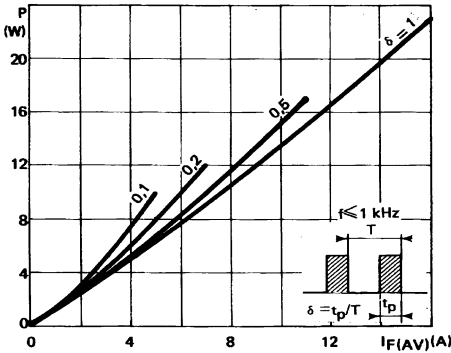


FIGURE 1: Low frequency power losses versus average current

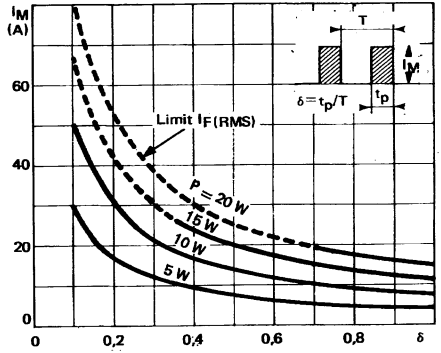


FIGURE 2: Peak current versus form factor

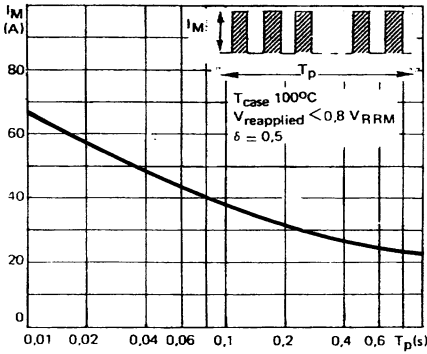


FIGURE 3: Non repetitive peak surge current versus overload duration

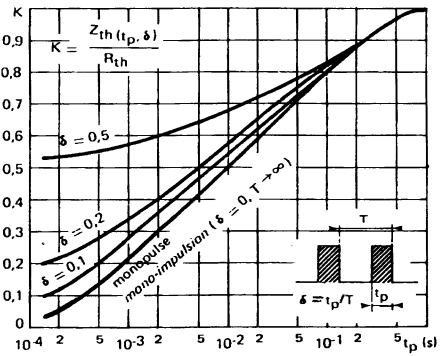


FIGURE 4: Thermal impedance versus pulse width

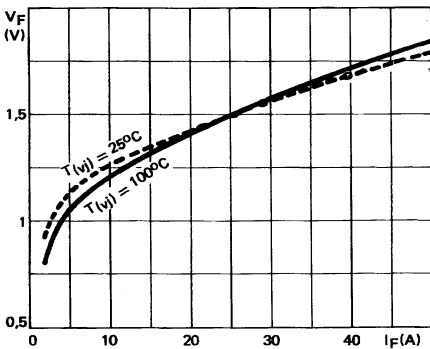


FIGURE 5: Forward voltage drop versus forward current

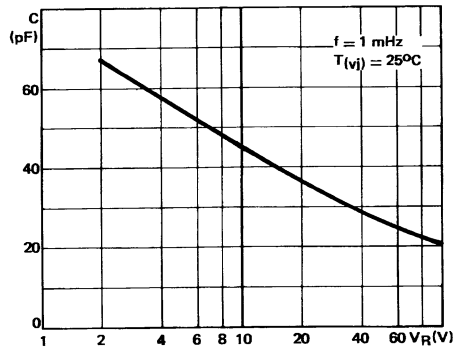


FIGURE 6: Capacitance versus applied reverse voltage

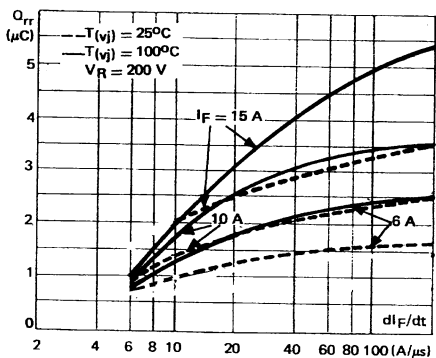


FIGURE 7: Recovery charge versus  $di_F/dt$

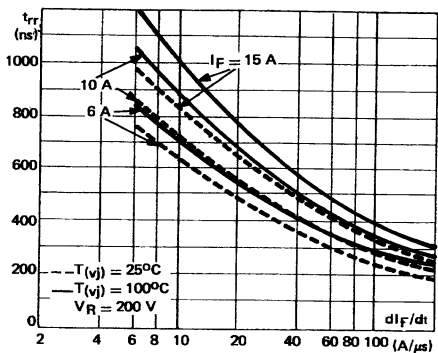


FIGURE 8: Recovery time versus  $di_F/dt$

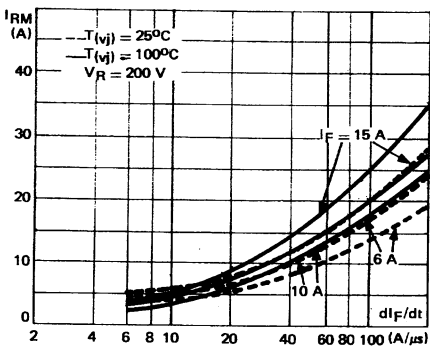


FIGURE 9: Peak reverse current versus  $di_F/dt$

**FAST RECOVERY RECTIFIER DIODES**

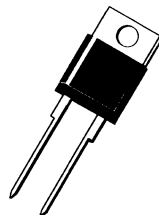
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- FAST AND SOFT RECOVERY
- THE SPECIFICATIONS AND CURVES ENABLE THE DETERMINATION OF  $t_{rr}$  AND  $I_{RM}$  AT 100°C UNDER USERS CONDITIONS
- INSULATED

**APPLICATIONS**

- MOTOR CONTROLS AND CONVERTERS
- SWITCHMODE POWER SUPPLIES

**DESCRIPTION**

Fast recovery rectifiers suited for applications in combination with superswitch transistors.

 Insulating voltage 2500 V<sub>RMS</sub>

**DO 220 AB**  
 (Plastic)

**ABSOLUTE RATINGS** (limiting values)

Symbol	Parameter		Value	Unit
$I_{FRM}$	Repetitive Peak Forward Current	$t_p \leq 20\mu s$	120	A
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$T_{stg}$ $T_j$	Storage and Junction Temperature Range		- 40 to 150	°C

Symbol	Parameter	ESM 765PI-		Unit
		600	800	
$V_{RRM}$	Repetitive Peak Reverse Voltage	600	800	V
$V_{RSM}$	Non Repetitive Peak Reverse Voltage	600	800	V

**THERMAL RESISTANCE**

Symbol	Parameter	Value	Unit
$R_{th(j-c)}$	Junction-case	3.5	°C/W

**ELECTRICAL CHARACTERISTICS**

**STATIC CHARACTERISTICS**

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V <sub>F</sub>	T <sub>J</sub> = 25°C	I <sub>F</sub> = 10A			1.4	V
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**RECOVERY CHARACTERISTICS**

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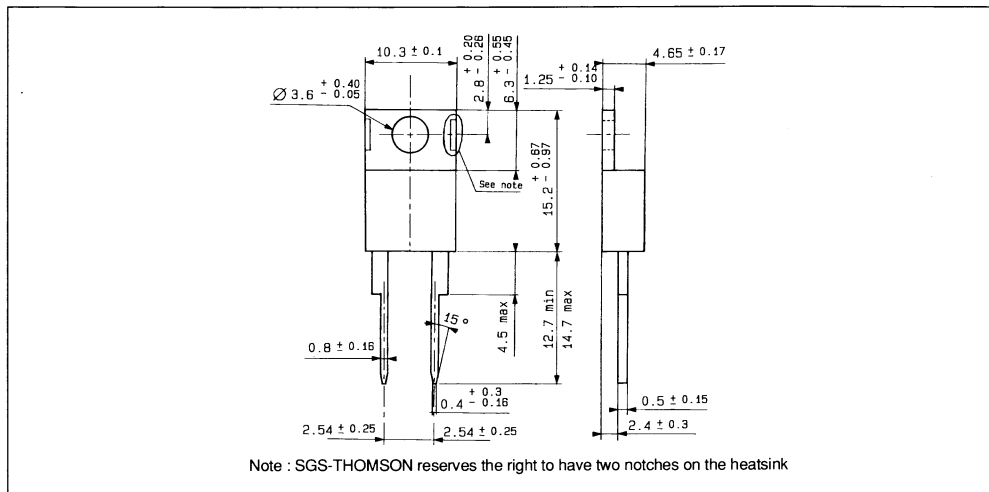
To evaluate the conduction losses use the following equations :

$$V_F = 1.2 + 0.015 I_F$$

$$P = 1.2 \times I_{F(AV)} + 0.015 I_F^2 (R_{MS})$$

**PACKAGE MECHANICAL DATA**

DO 220 AB Plastic



Cooling method : by conduction (method C)

Marking : type number

Weight : 2g

Recommended torque value : 80cm. N

Maximum torque value : 100cm. N

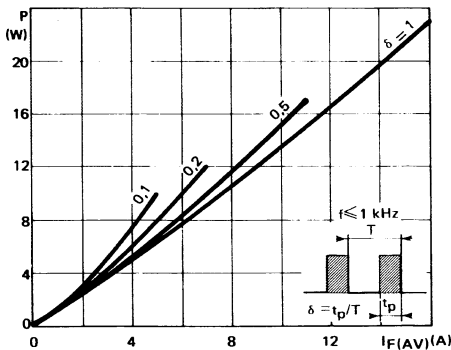


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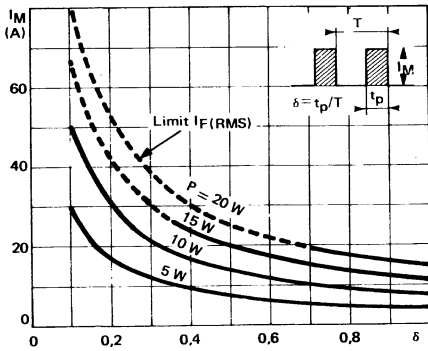


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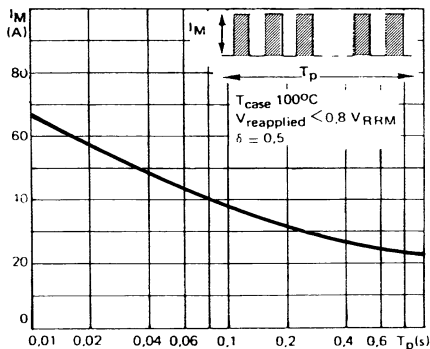


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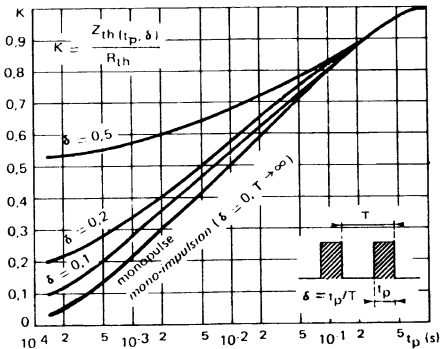


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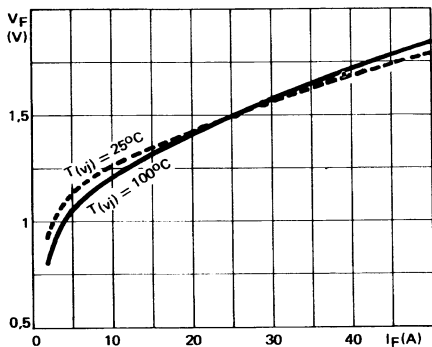


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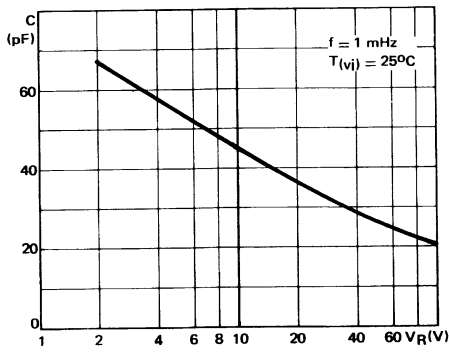


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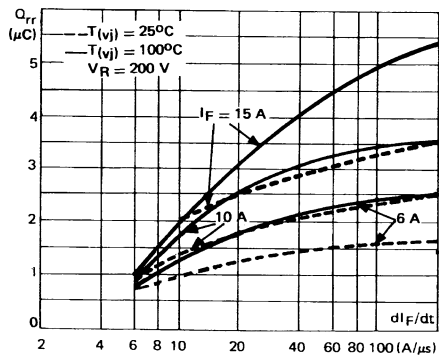


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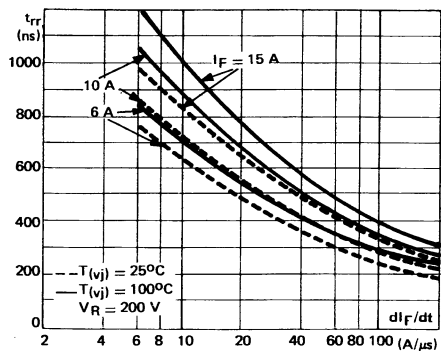


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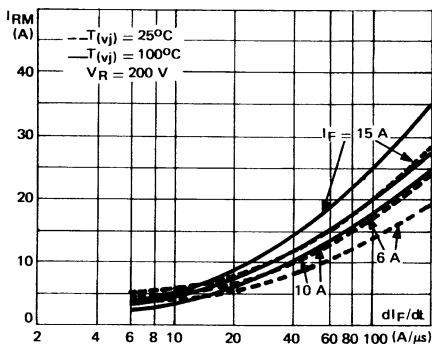


FIGURE 9: Peak reverse current versus  $di_F/dt$