

POWER SCHOTTKY RECTIFIERS

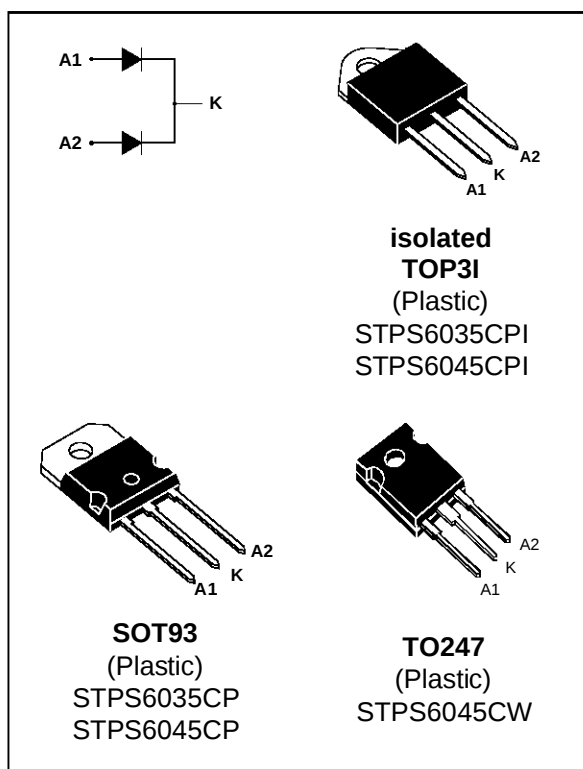
FEATURES AND BENEFITS

- VERY SMALL CONDUCTION LOSSES
- NEGLIGIBLE SWITCHING LOSSES
- EXTREME FAST SWITCHING
- HIGH AVALANCHE CAPABILITY
- LOW THERMAL RESISTANCE
- INSULATED PACKAGE:
 Insulating voltage = 2500V_{RMS}
 Capacitance = 12pF

DESCRIPTION

Dual center tap schottky rectifier suited for switchmode power supply and high frequency DC to DC converters.

Packaged in SOT93, TOP3I or TO247 this device is intended for use in low voltage, high frequency inverters, free wheeling and polarity protection applications.



ABSOLUTE RATINGS (limiting values)

Symbol	Parameter			Value	Unit
I _{F(RMS)}	RMS Forward Current		Per diode	60	A
I _{F(AV)}	Average Forward Current δ = 0.5	SOT93/TO247	T _c = 125°C	Per diode	30
		TOP3I	T _c = 105°C	Per device	60
I _{FSM}	Surge Non Repetitive Forward Current		T _p = 10 ms Sinusoidal	Per diode	400
I _{RRM}	Peak Repetitive Reverse Current		T _p = 2 μs F = 1KHz	Per diode	1
T _{stg} T _j	Storage and Junction Temperature Range			- 65 to + 150 - 65 to + 150	°C
dV/dt	Critical Rate of Rise of Reverse Voltage			1000	V/μs

Symbol	Parameter	STPS		Unit
		6035CP 6035CPI	6045CP 6045CPI 6045CW	
V _{RRM}	Repetitive Peak Reverse Voltage	35	45	V

THERMAL RESISTANCE

Symbol	Parameter			Value	Unit
$R_{TH(j-c)}$	Junction-case	SOT93/TO247	Per diode total	0.95 0.55	°C/W
		TOP3I	Per diode total	1.8 1.1	
$R_{TH(c)}$	Coupling	SOT93/TO247		0.15	°C/W
		TOP3I		0.4	

When the diodes 1 and 2 are used simultaneously :
 $\Delta T_J(\text{diode } 1) = P(\text{diode } 1) \times R_{TH(\text{Per diode})} + P(\text{diode } 2) \times R_{TH(c)}$

ELECTRICAL CHARACTERISTICS
STATIC CHARACTERISTICS PER DIODE

Symbol	Parameter	Tests Conditions		Min.	Typ.	Max.	Unit
I_R^*	Reverse leakage current	$T_J = 25^\circ\text{C}$	$V_R = V_{RRM}$			500	μA
		$T_J = 125^\circ\text{C}$				80	mA
V_F^{**}	Forward voltage drop	$T_J = 125^\circ\text{C}$	$I_F = 60\text{ A}$			0.78	V
		$T_J = 125^\circ\text{C}$	$I_F = 30\text{ A}$			0.63	
		$T_J = 25^\circ\text{C}$	$I_F = 60\text{ A}$			0.84	

Pulse test : * $t_p = 5\text{ ms}$, duty cycle $< 2\%$

** $t_p = 380\text{ }\mu\text{s}$, duty cycle $< 2\%$

To evaluate the conduction losses use the following equation:

$$P = 0.48 \times I_{F(AV)} + 0.005 I_F^2(RMS)$$

Fig. 1: Average forward power dissipation versus average forward current. (Per diode)

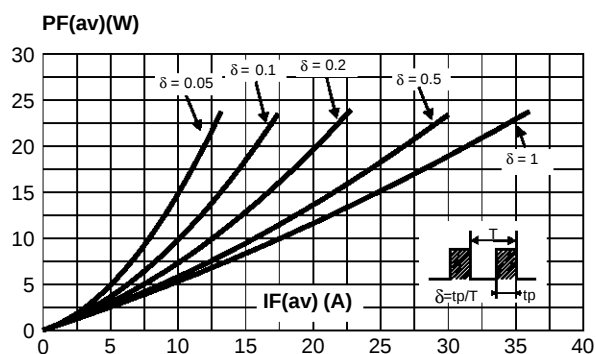


Fig. 2: Average current versus ambient temperature (duty cycle: 0.5) (per diode) (SOT93 and TO247).

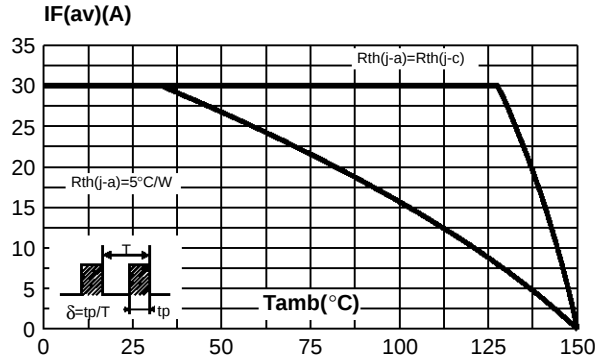


Fig. 4: Non repetitive surge peak forward current versus overload duration (maximum values) (per diode) (SOT93 and TO247).

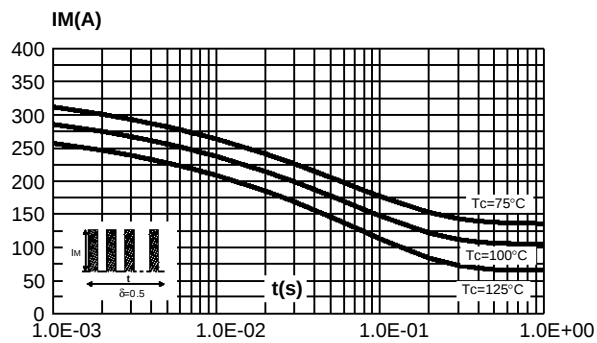


Fig. 6: Relative variation of thermal transient impedance junction to case versus pulse duration.

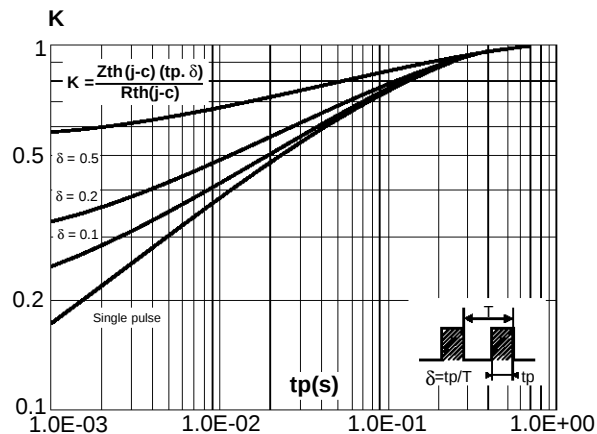


Fig. 3: Average current versus ambient temperature (duty cycle: 0.5) (per diode) (TOP3I).

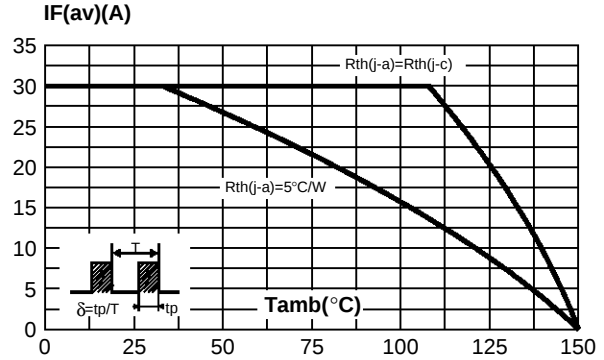


Fig. 5: Non repetitive surge peak forward current versus overload duration (maximum values) (per diode) (TOP3I).

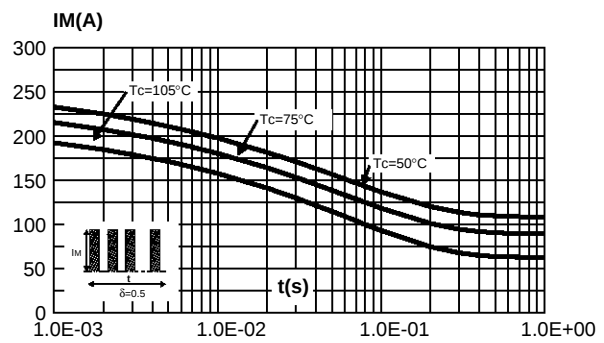
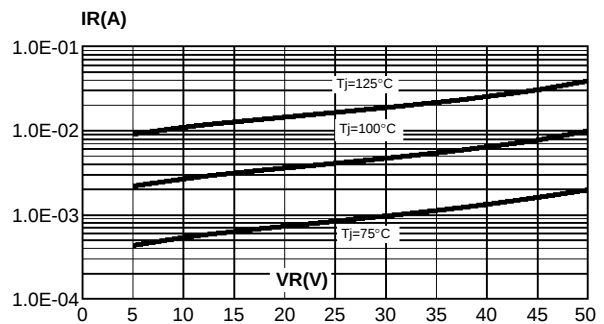


Fig. 7: Reverse leakage current versus reverse voltage applied (typical values) (per diode).



STPS6035CP/CPI / STPS6045CP/CPI / STPS6045CW

Fig. 8: Junction capacitance versus reverse voltage applied (typical values) (per diode).

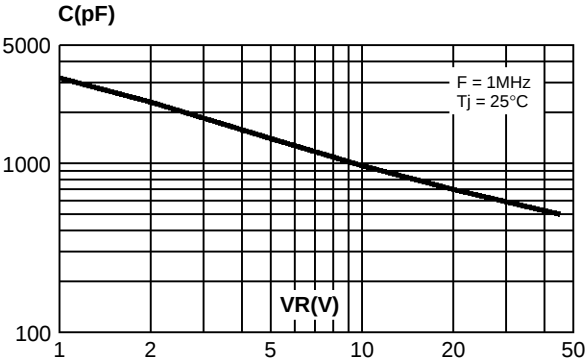
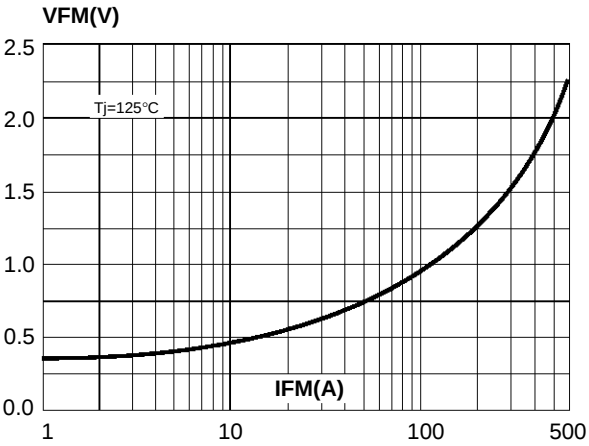
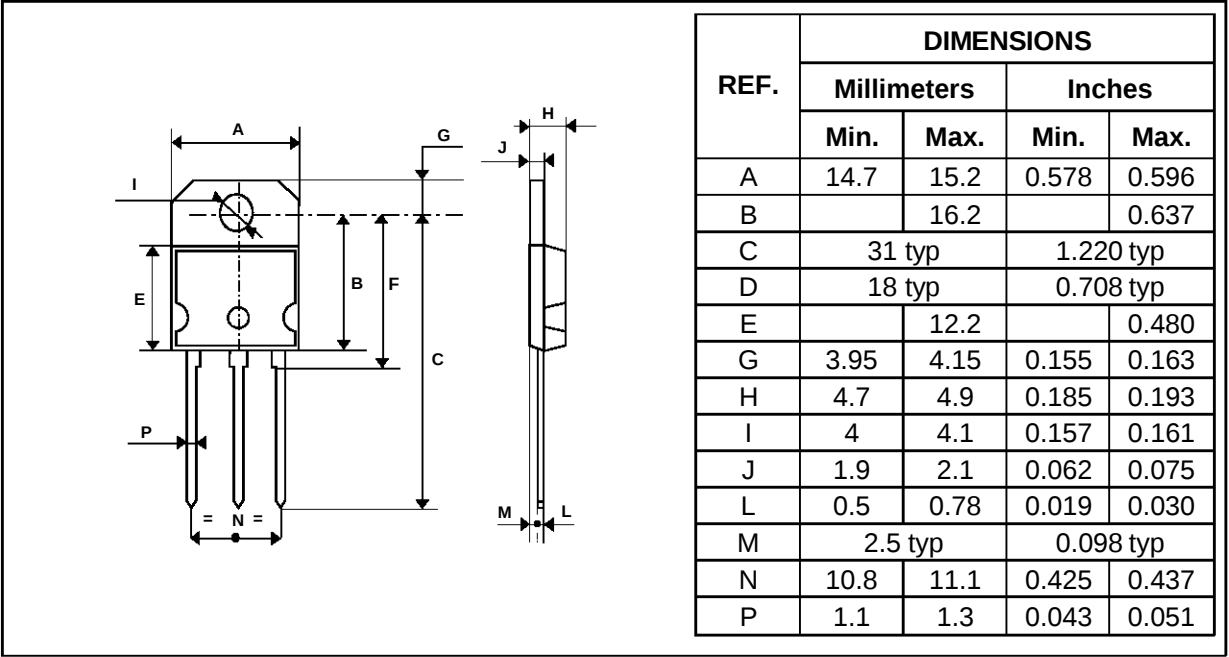


Fig. 9: Forward voltage drop versus forward current (maximum values) (per diode).



PACKAGE MECHANICAL DATA
SOT93

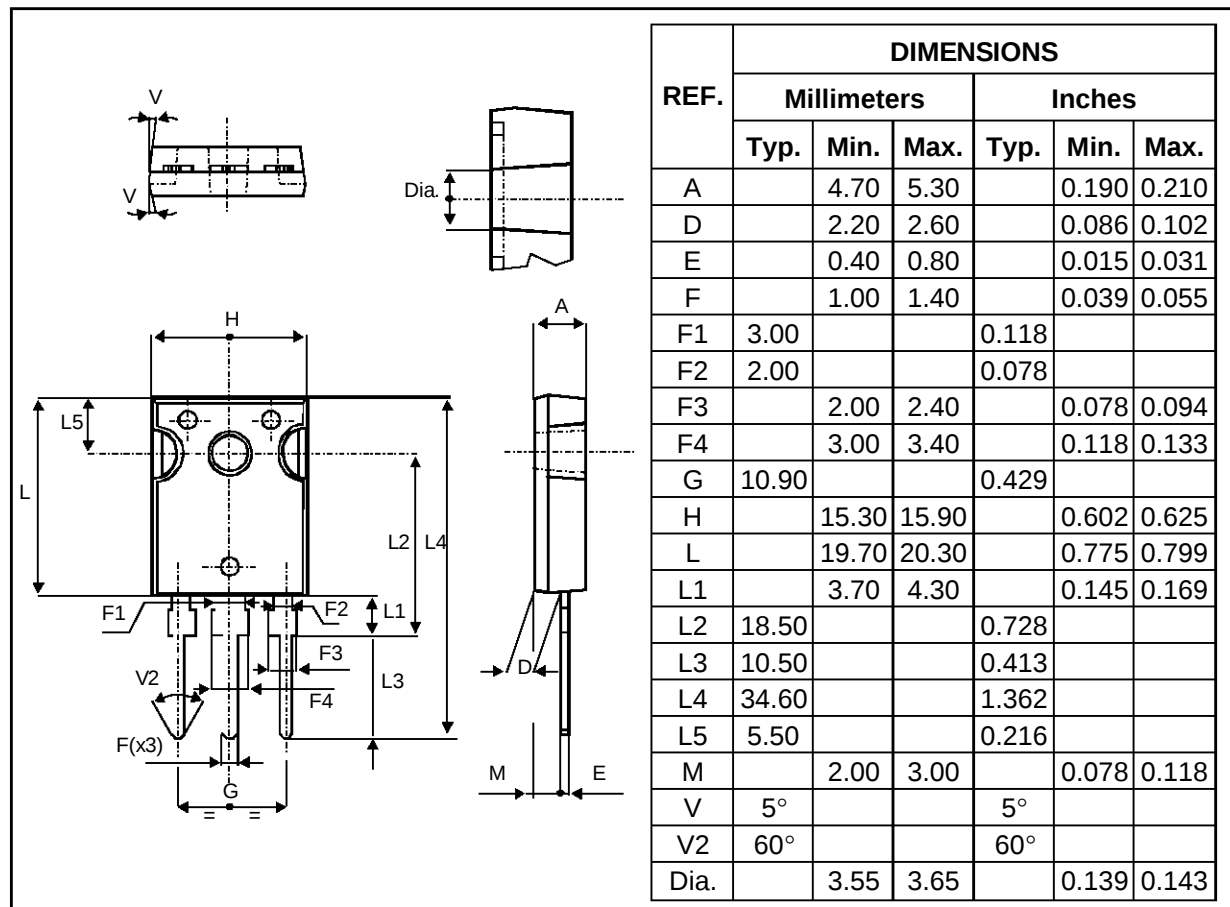


Cooling method : C
Marking : Type number
Weight : 5.3 g
Recommended torque value : 0.8m.N
Maximum torque value : 1.0m.N

PACKAGE MECHANICAL DATA
TOP3I (isolated)

REF.	DIMENSIONS					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	15.10		15.50	0.594		0.610
B	20.70		21.10	0.815		0.831
C	14.35		15.60	0.565		0.614
D	16.10		16.50	0.630		0.650
G	3.40		3.65	0.134		0.144
H	4.40		4.60	0.173		0.181
I	4.08		4.17	0.161		0.164
J	1.45		1.55	0.057		0.061
L	0.50		0.70	0.020		0.028
M	2.70		2.90	0.106		0.114
N	5.40		5.65	0.213		0.222
P	1.20		1.40	0.047		0.056
R		4.60			0.181	

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

PACKAGE MECHANICAL DATA
 TO247


Cooling method : C

Marking : Type number

Weight : 4.4 g

Recommended torque value : 0.8m.N

Maximum torque value : 1.0m.N

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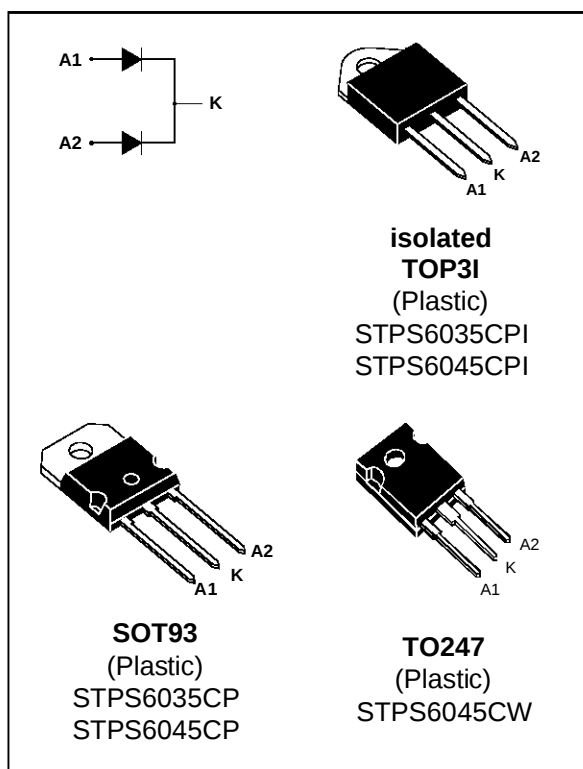
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I_{RRM}	Peak Repetitive Reverse Current		$T_p = 2\text{ }\mu\text{s}$ $F = 1\text{ KHz}$ Per diode	1	A
T_{stg} T_j	Storage and Junction Temperature Range			- 65 to + 150 - 65 to + 150	$^\circ\text{C}$
dV/dt	Critical Rate of Rise of Reverse Voltage			1000	V/ μs

Symbol	Parameter	STPS		Unit
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STATIC CHARACTERISTICS PER DIODE

Symbol	Parameter	Tests Conditions		Min.	Typ.	Max.	Unit
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To evaluate the conduction losses use the following equation:

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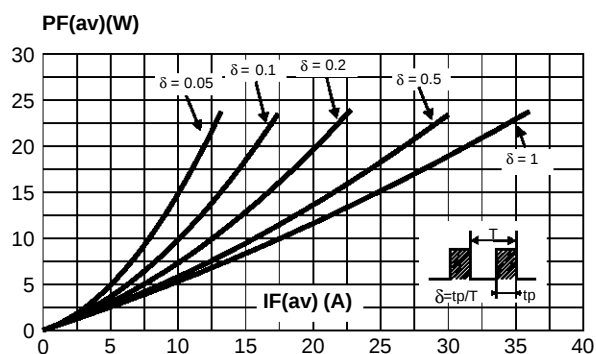


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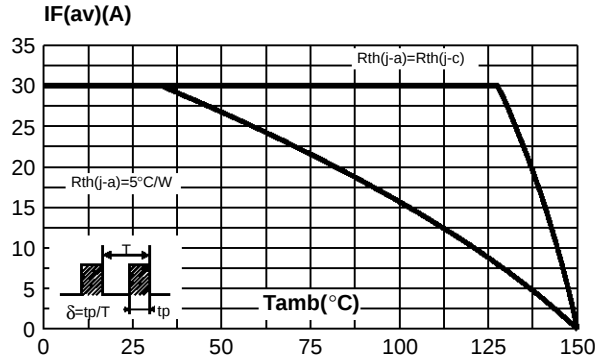


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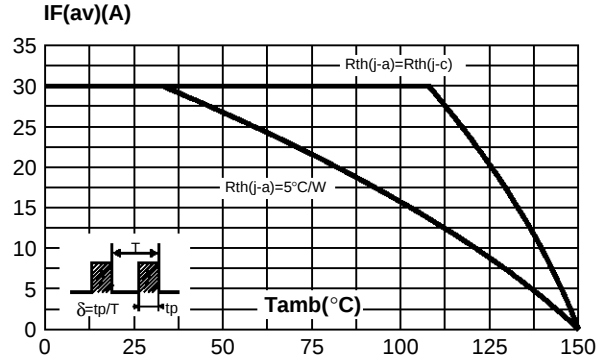


Fig. 4: Non repetitive surge peak forward current versus overload duration (maximum values) (per diode) (SOT93 and TO247).

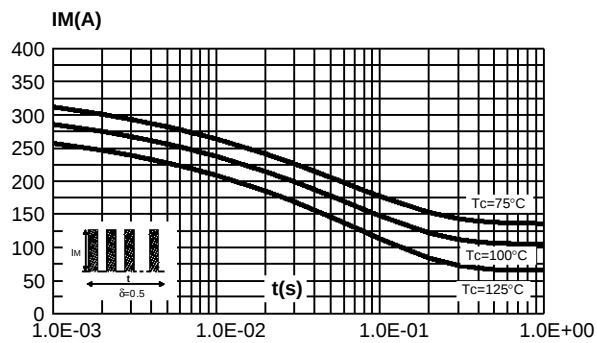


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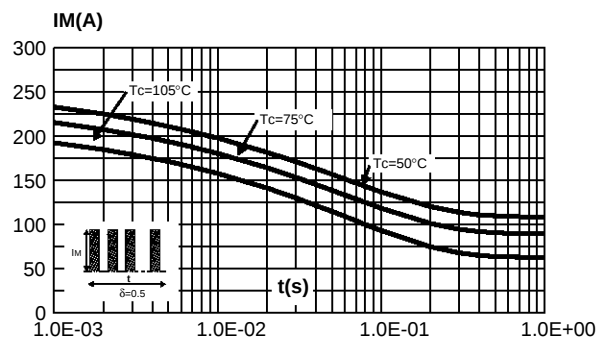


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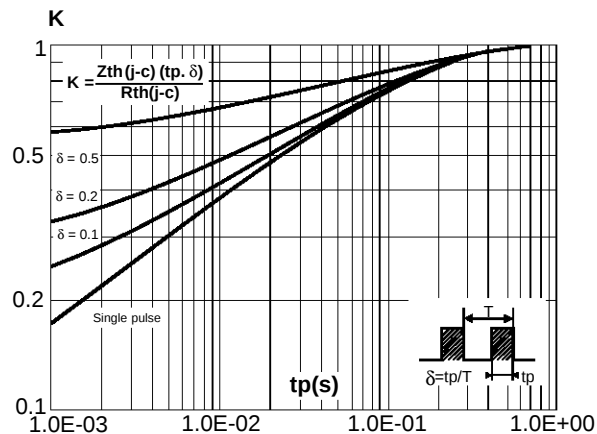
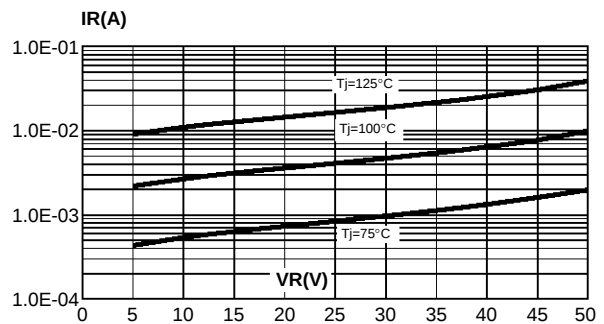


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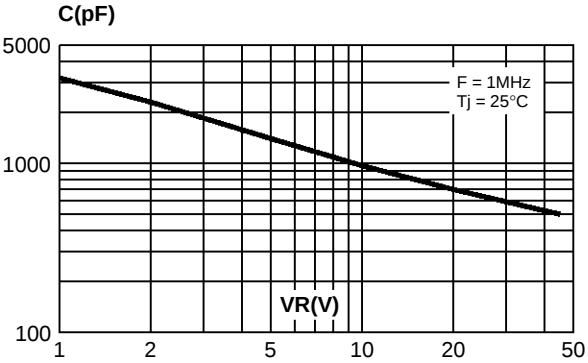
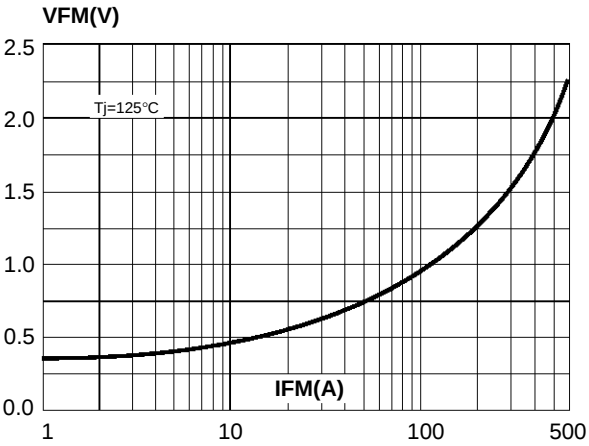
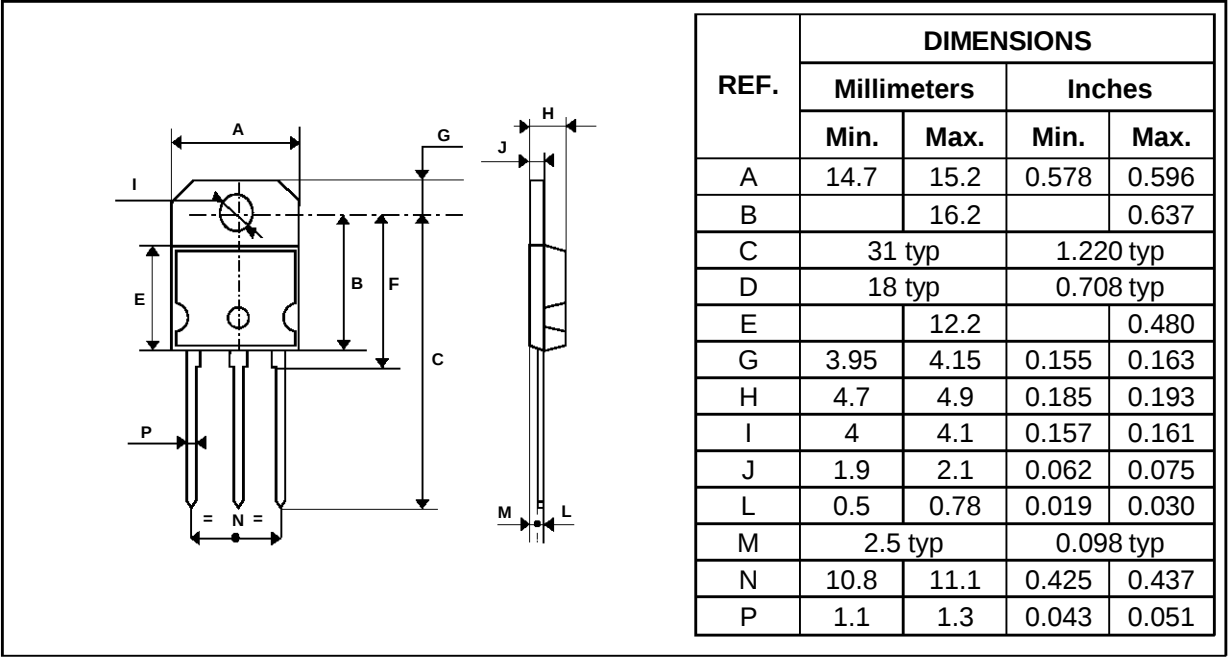


Fig. 9: Forward voltage drop versus forward current (maximum values) (per diode).



PACKAGE MECHANICAL DATA
SOT93



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

PACKAGE MECHANICAL DATA

TOP3I (isolated)

REF.	DIMENSIONS					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
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H	4.40		4.60	0.173		0.181
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M	2.70		2.90	0.106		0.114
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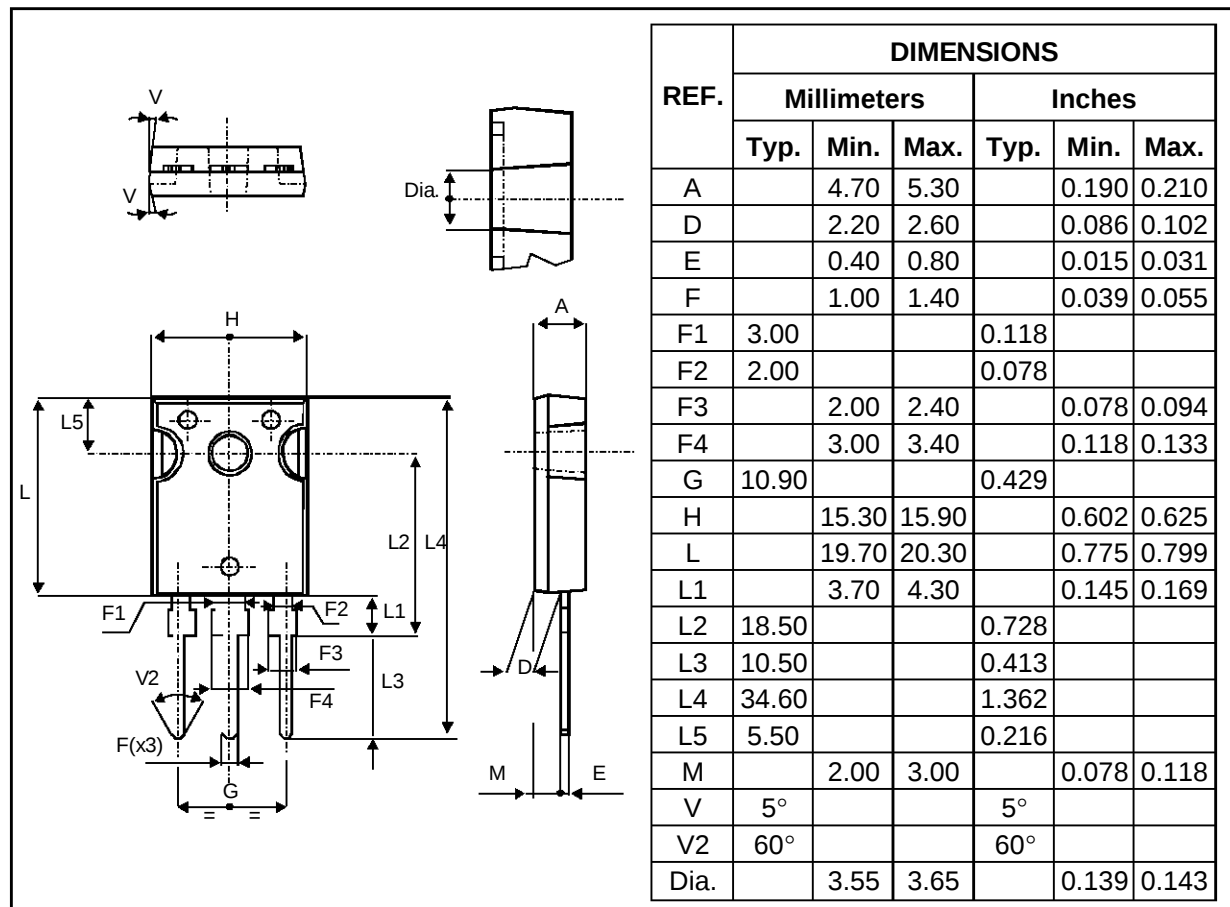
Cooling method : C

Marking : Type number

Weight : 5.3 g

Recommended torque value : 0.8m.N

Maximum torque value : 1.0m.N

PACKAGE MECHANICAL DATA
 TO247


Cooling method : C

Marking : Type number

Weight : 4.4 g

Recommended torque value : 0.8m.N

Maximum torque value : 1.0m.N

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