

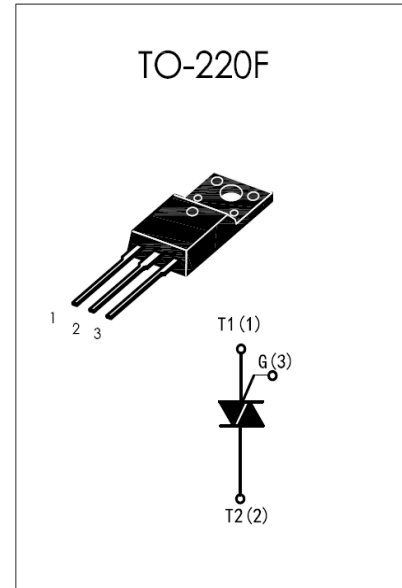


High current density due to double mesa technology; SIPOS and Glass Passivation. IPT12Q06-xx series are suitable for general purpose AC Switching. They can be used as an ON/OFF function In application such as static relays, heating regulation, Induction motor starting circuits... or for phase Control operation light dimmers, motor speed Controllers.

The IPT12Q06-xxF(Insulated version) series are isolated internally, they provided a 2500V RMS isolation voltage from all three terminals to external heatsink..

MAIN FEATURES

Symbol	Value	Unit
$I_{T(RMS)}$	12	A
$V_{DRM} / V_{RRM}$	600	V
$V_{TM}$	$\leq 1.55$	V



ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Value	Unit
Storage Junction Temperature Range	$T_{stg}$	-40 to +150	$^{\circ}C$
Operating Junction Temperature Range	$T_j$	-40 to +125	$^{\circ}C$
Repetitive Peak Off-state Voltage Repetitive Peak Reverse Voltage	$V_{DRM}$ $V_{RRM}$	600 600	V
Non Repetitive Peak Off-state Voltage Non Repetitive Peak Reverse Voltage	$V_{DSM}$ $V_{RSM}$	700 700	V
RMS on-state current (Full sine wave)	$I_{T(RMS)}$	12	A
Non repetitive surge peak on-state Current (full cycle, $T_j = 25^{\circ}C$ )	$I_{TSM}$	126 120	A
$I^2t$ Value for fusing $t_p = 10ms$	$I^2t$	78	$A^2s$
Critical Rate of rise of on-state current $I_G = 2xI_{GT}$ , $t_r \leq 100ns$ , $f = 120Hz$ , $T_j = 125^{\circ}C$	$di / dt$	50	A/us
Peak gate current	$I_{GM}$	4	A
Average gate power dissipation	$P_{G(AV)}$	1	W

# IPT12Q06-xxF

## ELECTRICAL CHARACTERISTICS (T<sub>j</sub> = 25 °C unless otherwise specified)

Symbol	Test Condition	Quadrant		IPT12Q06-xx F		Unit
				CE	BE	
I <sub>GT</sub>	V <sub>D</sub> = 12V R <sub>L</sub> = 30Ω	I – II – III IV	MAX	25 50	50 100	mA
V <sub>GT</sub>		ALL	MAX	1.3		V
V <sub>GD</sub>	V <sub>D</sub> =V <sub>D</sub> RM, R <sub>L</sub> =3.3KΩ, T <sub>j</sub> = 125 °C	ALL	MIN	0.2		V
I <sub>L</sub>	I <sub>G</sub> = 1.2 I <sub>GT</sub>	I – III – IV	MAX	40	50	mA
		II		80	100	
I <sub>H</sub>	I <sub>T</sub> = 100mA		MAX	25	50	mA
dV/dt	V <sub>D</sub> = 67% V <sub>D</sub> RM gate open T <sub>j</sub> = 125 °C		MIN	200	400	V/us
(dI/dt) <sub>c</sub>	(dV/dt) c=0.1V/us T <sub>j</sub> = 125 °C		MIN	-	-	A/ms
	(dV/dt) c=10V/us T <sub>j</sub> = 125 °C			-	-	
	Without snubber T <sub>j</sub> = 125 °C			-	-	

## STATIC CHARACTERISTICS

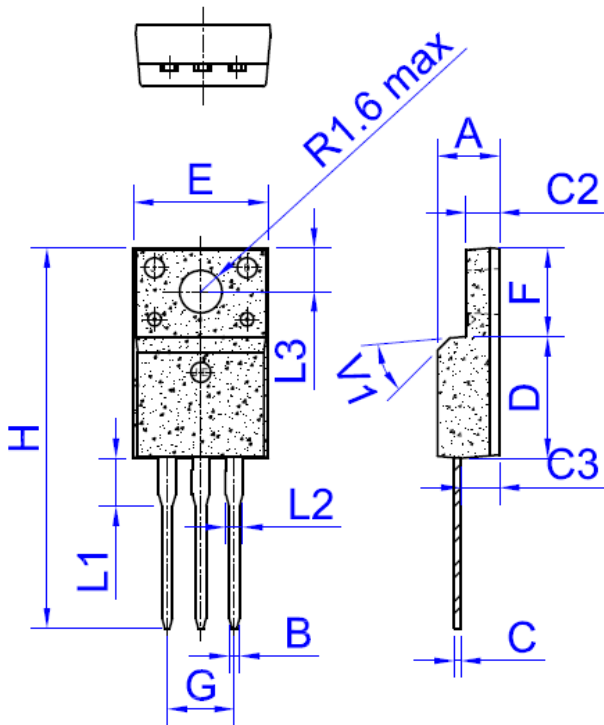
Symbol	Test Conditions		Value(MAX)	Unit
V <sub>TM</sub>	I <sub>TM</sub> = 17A, t <sub>p</sub> = 380uS	T <sub>j</sub> = 125 °C	1.55	V
I <sub>DRM</sub>	V <sub>D</sub> = V <sub>D</sub> RM	T <sub>j</sub> = 125 °C	5	uA
I <sub>RRM</sub>	V <sub>R</sub> = V <sub>RRM</sub>	T <sub>j</sub> = 125 °C	1	mA

## THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
R <sub>th(j-c)</sub>	Junction to case(AC)	3.3	°C/W

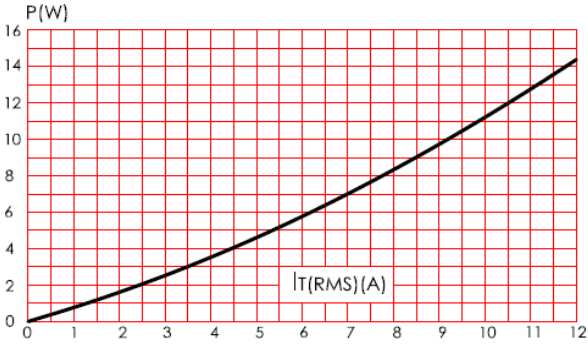
## PACKAGE MECHANICAL DATA

### TO-220F

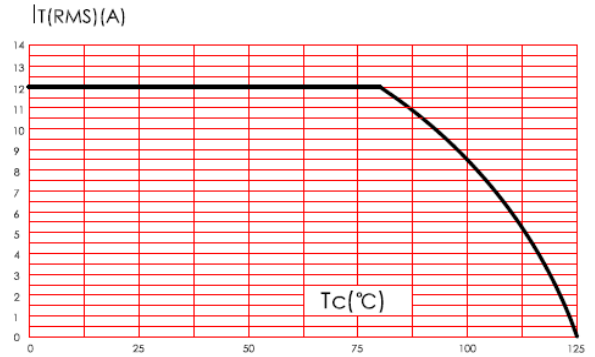


Ref	Dimensions					
	Millimeters			Inches		
	Min	Typ	Max	Min	Typ	Max
A	4.4		4.8	0.173		0.189
B	0.74	0.8	0.83	0.029	0.031	0.033
C	0.5		0.75	0.020		0.030
C2	2.4		2.7	0.094		0.106
C3	2.6		3	0.102		0.118
D	8.8		9.3	0.346		0.367
E	9.7		10.3	0.382		0.406
F	6.4		6.8	0.252		0.268
G	5		5.2	0.197		0.205
H	28.0		29.8	11.0		11.7
L1		3.63			0.143	
L2	1.14		1.7	0.044		0.067
L3		3.3			0.130	
V1		40°			40°	

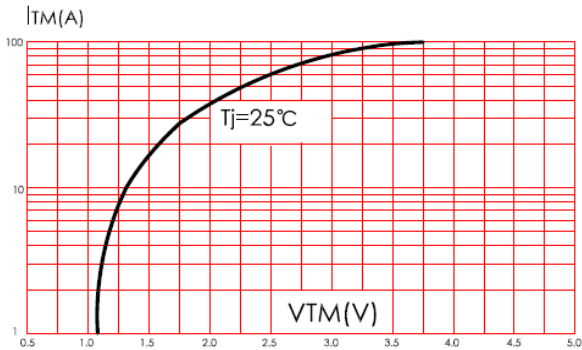
**Fig. 1:** Maximum power dissipation versus RMS on-state current(full cycle)



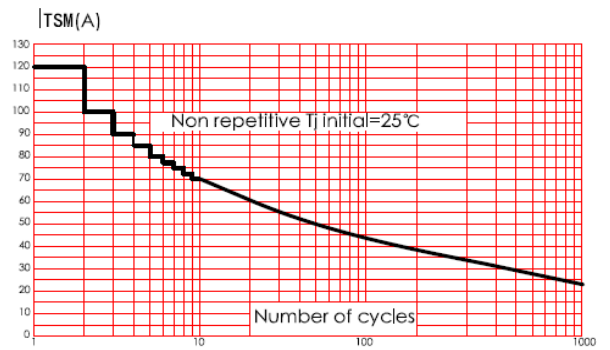
**Fig. 2:** RMS on-state current versus case temperature(full cycle)



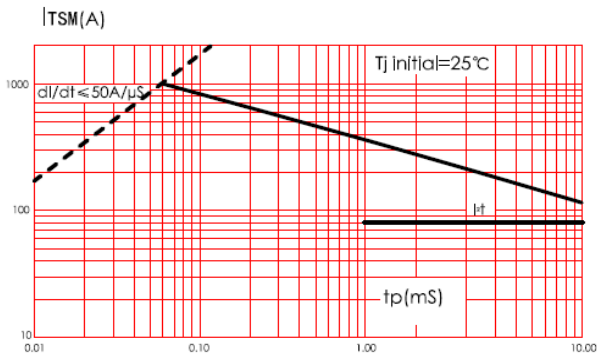
**Fig. 3:** on-state characteristics (maximum values)



**Fig. 4:** Surge peak on-state current versus number of cycles



**Fig. 5:** Non-repetitive surge peak on-state current for a sinusoidal pulse with width  $t_p < 10mS$



**Fig. 6:** Relative variation of gate trigger current, holding current and latching current versus junction temperature(typical values)

