

YZPST-G300HF120TK-G3

300A 1200V IGBT Module

FEATURES

- High short circuit capability, self limiting short circuit current
- IGBT CHIP(Trench+ Field Stop technology)
- $V_{CE(sat)}$ with positive temperature coefficient
- Fast switching and short tail current, Low switching losses
- Free wheeling diodes with fast and soft reverse recovery



APPLICATIONS

- High frequency switching application
- Medical applications
- Motion/servo control
- UPS systems

ABSOLUTE MAXIMUM RATINGS

T_c=25°C unless otherwise specified

Symbol	Parameter	Test Conditions	Values	Unit
IGBT				
V_{CES}	Collector - Emitter Voltage	$T_{vj}=25^{\circ}C$	1250	V
V_{GES}	Gate - Emitter Voltage		± 30	V
I_c	DC Collector Current	$T_c=25^{\circ}C$	450	A
		$T_c=80^{\circ}C$	300	A
I_{cM}	Repetitive Peak Collector Current	$t_p=1ms$	600	A
P_{tot}	Power Dissipation Per IGBT		3000	W
Diode				
V_{RRM}	Repetitive Reverse Voltage	$T_{vj}=25^{\circ}C$	1250	V
$I_{F(AV)}$	Average Forward Current	$T_c=25^{\circ}C$	450	A
		$T_c=80^{\circ}C$	300	A
I_{FRM}	Repetitive Peak Forward Current	$t_p=1ms$	600	A
I_t^2		$T_{vj}=125^{\circ}C, t=10ms,$ $V_R=0V$	19000	A^2s

ELECTRICAL AND THERMAL CHARACTERISTICS TC=25°C unless otherwise specified

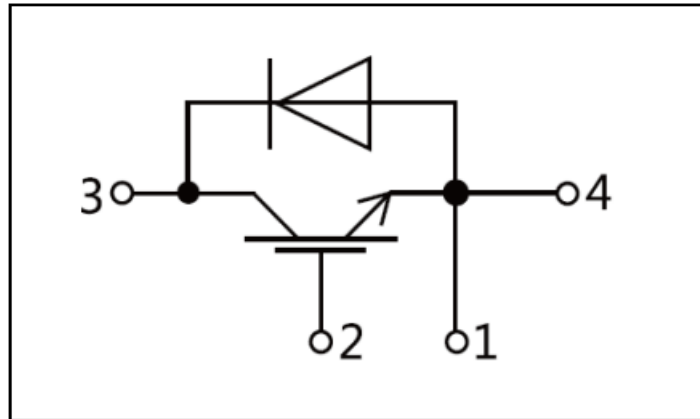
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
IGBT						
$V_{GE(th)}$	Gate - Emitter Threshold Voltage	$V_{CE}=V_{GE}, I_c=2.0mA$	5.0		6.8	V
$V_{CE(sat)}$	Collector - Emitter Saturation Voltage	$I_c=300A, V_{GE}=15V, T_{vj}=25^{\circ}C$		2.2	2.6	V
		$I_c=300A, V_{GE}=15V, T_{vj}=125^{\circ}C$		2.4		V
I_{CES}	Collector Leakage Current	$V_{CE}=1250V, V_{GE}=0V, T_{vj}=25^{\circ}C$			1	mA
		$V_{CE}=1250V, V_{GE}=0V, T_{vj}=125^{\circ}C$			5	mA
R_{gint}	Integrated Gate Resistor	Per switch		10		Ω
I_{GES}	Gate Leakage Current	$V_{CE}=0V, V_{GE}\pm 15V, T_{vj}=125^{\circ}C$	-500		500	nA
C_{ies}	Input Capacitance	$V_{CE}=25V, V_{GE}=0V, f=1MHz$		21		nF
C_{res}	Reverse Transfer Capacitance				1.5	
$t_{d(on)}$	Turn - on Delay Time	$V_{cc}=600V, I_c=300A, R_G=4.7\Omega,$ $V_{GE}=\pm 15V,$ Inductive Load	$T_{vj}=25^{\circ}C$	90		ns
			$T_{vj}=125^{\circ}C$	110		ns
t_r	Rise Time	$V_{GE}=\pm 15V,$ Inductive Load	$T_{vj}=25^{\circ}C$	55		ns
			$T_{vj}=125^{\circ}C$	60		ns
$t_{d(off)}$	Turn - off Delay Time	$V_{cc}=600V, I_c=300A, R_G=4.7\Omega,$ $V_{GE}=\pm 15V,$ Inductive Load	$T_{vj}=25^{\circ}C$	460		ns
			$T_{vj}=125^{\circ}C$	500		ns
t_f	Fall Time	$V_{GE}=\pm 15V,$ Inductive Load	$T_{vj}=25^{\circ}C$	55		ns
			$T_{vj}=125^{\circ}C$	60		ns
E_{on}	Turn - on Energy	$V_{cc}=600V, I_c=300A, R_G=4.7\Omega,$ $V_{GE}=\pm 15V,$ Inductive Load	$T_{vj}=25^{\circ}C$	28		mJ
			$T_{vj}=125^{\circ}C$	12		mJ
E_{off}	Turn - off Energy	$V_{GE}=\pm 15V,$ Inductive Load	$T_{vj}=25^{\circ}C$	25		mJ
			$T_{vj}=125^{\circ}C$	13		mJ
I_{sc}	Short Circuit Current	$t_{psc}\leq 10\mu S, V_{GE}=15V$ $T_{vj}=125^{\circ}C, V_{cc}=720V$		1300		A
R_{thJC}	Junction-to-Case Thermal Resistance (Per IGBT)				0.13	K/W
Diode						
V_F	Forward Voltage	$I_F=300A, V_{GE}=0V, T_{vj}=25^{\circ}C$		2	2.4	V
		$I_F=300A, V_{GE}=0V, T_{vj}=125^{\circ}C$		2.2		V
Q_{rr}	Reversed Chargr	$I_F=300A, V_R=600V$		50		μC
I_{RRM}	Max. Reverse Recovery Current	$di_F/dt=-2400A/\mu s$		170		A
E_{rec}	Reverse Recovery Energy	$T_{vj}=125^{\circ}C$		20		mJ
R_{thJCD}	Junction-to-Case Thermal Resistance (Per Diode)				0.12	K/W

MODULE CHARACTERISTICS

T_c=25°C unless otherwise specified

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
T _{vj max}	Max. Junction Temperature				175	°C
T _{vj op}	Operating Temperature		-40		150	°C
T _{stg}	Storage Temperature		-40		125	°C
V _{isol}	Insulation Test Voltage	AC, t=1min	3000			V
Torque	To-Sink	Recommended (M6)	1.1		2	N·m
Torque	To Signal Terminal	Recommended (M6)	3		5	N·m
	To Power Terminal	Recommended (M)	1.1		2	
Weight				328		g

CIRCUIT DIAGRAM



PACKAGE OUTLINE

