

G100HF65TE-G1 100A 650V

### 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

- AC motor control
- Inverter and power supplies
- Motion/servo control
- UPS systems



G1 Series Module

### ABSOLUTE MAXIMUM RATINGS

$T_c=25^{\circ}\text{C}$  unless otherwise specified

Symbol	Parameter	Test Conditions	Values	Unit
<b>IGBT</b>				
$V_{CES}$	Collector - Emitter Voltage	$T_{vj}=25^{\circ}\text{C}$	650	V
$V_{GES}$	Gate - Emitter Voltage		$\pm 30$	V
$I_c$	DC Collector Current	$T_c=25^{\circ}\text{C}$	125	A
		$T_c=80^{\circ}\text{C}$	100	A
$I_{cM}$	Repetitive Peak Collector Current	$t_p=1\text{ms}$	200	A
$P_{tot}$	Power Dissipation Per IGBT		330	W
<b>Diode</b>				
$V_{RRM}$	Repetitive Reverse Voltage	$T_{vj}=25^{\circ}\text{C}$	650	V
$I_{F(AV)}$	Average Forward Current	$T_c=25^{\circ}\text{C}$	125	A
		$T_c=80^{\circ}\text{C}$	100	A
$I_{FRM}$	Repetitive Peak Forward Current	$t_p=1\text{ms}$	200	A
$I^2_t$		$T_{vj}=125^{\circ}\text{C}$ , $t=10\text{ms}$ , $V_R=0\text{V}$	1000	$\text{A}^2\text{s}$

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

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
<b>IGBT</b>						
$V_{GE(th)}$	Gate - Emitter Threshold Voltage	$V_{CE}=V_{GE}, I_c=2.0mA$	5.0		6.8	V
$V_{CE(sat)}$	Collector - Emitter Saturation Voltage	$I_c=100A, V_{GE}=15V, T_{vj}=25^{\circ}C$		1.5	1.7	V
		$I_c=100A, V_{GE}=15V, T_{vj}=125^{\circ}C$		1.4		V
$I_{CES}$	Collector Leakage Current	$V_{CE}=650V, V_{GE}=0V, T_{vj}=25^{\circ}C$			1	mA
		$V_{CE}=650V, V_{GE}=0V, T_{vj}=125^{\circ}C$			5	mA
$I_{GES}$	Gate Leakage Current	$V_{CE}=0V, V_{GE}\pm 15V, T_{vj}=125^{\circ}C$	-500		500	nA
$Q_{ge}$	Gate Charge	$V_{CE}=650V, I_c=100A, V_{GE}=\pm 15V$		1.1		$\mu C$
$C_{ies}$	Input Capacitance	$V_{CE}=25V, V_{GE}=0V, f=1MHz$		6.2		nF
$C_{res}$	Reverse Transfer Capacitance			0.19		nF
$t_{d(on)}$	Turn - on Delay Time	$V_{cc}=300V, I_c=100A, R_G=3.3\Omega$	$T_{vj}=25^{\circ}C$		70	ns
			$T_{vj}=125^{\circ}C$		80	ns
$t_r$	Rise Time	$V_{GE}=\pm 15V, Inductive Load$	$T_{vj}=25^{\circ}C$		20	ns
			$T_{vj}=125^{\circ}C$		20	ns
$t_{d(off)}$	Turn - off Delay Time	$V_{cc}=300V, I_c=100A, R_G=3.3\Omega$	$T_{vj}=25^{\circ}C$		260	ns
			$T_{vj}=125^{\circ}C$		290	ns
$t_f$	Fall Time	$V_{GE}=\pm 15V, Inductive Load$	$T_{vj}=25^{\circ}C$		70	ns
			$T_{vj}=125^{\circ}C$		70	ns
$E_{on}$	Turn - on Energy	$V_{cc}=300V, I_c=100A, R_G=3.3\Omega$	$T_{vj}=25^{\circ}C$		0.7	mJ
			$T_{vj}=125^{\circ}C$		2	mJ
$E_{off}$	Turn - off Energy	$V_{GE}=\pm 15V, Inductive Load$	$T_{vj}=25^{\circ}C$		4	mJ
			$T_{vj}=125^{\circ}C$		7	mJ
$I_{sc}$	Short Circuit Current	$t_{psc}\leq 6\mu S, V_{GE}=15V, T_{vj}=125^{\circ}C, V_{cc}=360V$		500		A
$R_{thjC}$	Junction-to-Case Thermal Resistance (Per IGBT)				0.45	K/W

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### Diode

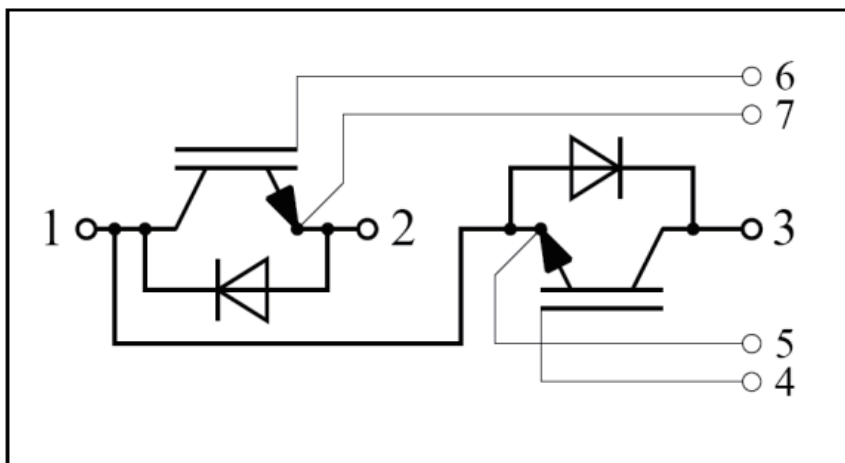
V <sub>F</sub>	Forward Voltage	I <sub>F</sub> =100A , V <sub>GE</sub> =0V, T <sub>vj</sub> =25°C	1.55	1.95	V
		I <sub>F</sub> =100A , V <sub>GE</sub> =0V, T <sub>vj</sub> =125°C	1.5		V
Q <sub>rr</sub>	Reverse Recovery Charge	I <sub>F</sub> =100A , V <sub>R</sub> =300V	8		uC
I <sub>RRM</sub>	Max. Reverse Recovery Current	di <sub>F</sub> /dt=-5100A/μs	150		A
E <sub>rec</sub>	Reverse Recovery Energy	T <sub>vj</sub> =125°C	2.25		mJ
R <sub>thJCD</sub>	Junction-to-Case Thermal Resistance (Per Diode)			0.75	K/W

### MODULE CHARACTERISTICS

T<sub>c</sub>=25°C unless otherwise specified

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
T <sub>vj max</sub>	Max. Junction Temperature				150	°C
T <sub>vj op</sub>	Operating Temperature		-40		150	°C
T <sub>stg</sub>	Storage Temperature		-40		125	°C
V <sub>isol</sub>	Insulation Test Voltage	AC, t=1min		3000		V
Torque	To-Sink	Recommended (M6)	3		5	N·m
Torque	To-Terminal	Recommended (M5)	2.5		5	N·m
Weight				155		g

### CIRCUIT DIAGRAM



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**PACKAGE OUTLINE**

