GTR Module

Silicon N Channel IGBT

High Power Switching Applications

Motor Control Applications

Features

- High input impedance
- High speed:

$$\begin{split} t_{f} &= 0.30 \mu s \; (\text{Max.}) \; (I_{C} = 50 \text{A}) \\ t_{rr} &= 0.15 \mu s \; (\text{Max.}) \; (I_{F} = 50 \text{A}) \end{split}$$

- Enhancement mode
- The electrodes are isolated from case
- Includes a complete half bridge card in one package

Maximum Ratings (Ta = 25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT	
Collector-Emitter Voltage		V _{CES}	600	V	
Gate-Emitter Voltage		V _{GES}	± 20	V	
Collector Current	DC	Ι _C	50	А	
	1ms	I _{CP}	100		
Forward Current	DC	١ _F	50	Α	
	1ms	I _{FM}	100		
Collector Power Dissipation (Tc = 25°C)	P _C	280	W		
Junction Temperature		Тj	150	°C	
Storage Temperature Range		T _{stg}	-40 ~ 125	°C	
Isolation Voltage	V _{Isol}	2500 (AC 1 min.)	V		
Screw Torque (Terminal/Mounting)		_	3/3	N ¥ m	



Weight : 202g (Typ.)

Equivalent Circuit



Unit in mm

Electrical Characteristics (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current		I _{GES}	$V_{GE} = \pm 20V$, $V_{CE} = 0$	_	—	± 500	nA
Collector Cut-off Current		I _{CES}	V _{CE} = 600V, V _{GE} = 0	_	—	1.0	mA
Gate-Emitter Cut-off Voltage		V _{GE (off)}	I _C = 5mA, V _{CE} = 5V	5.0	7.0	8.0	V
Collector-Emitter Saturation Voltage		V _{CE (sat)}	I _C = 50A, V _{GE} = 15V	—	2.10	2.70	V
Input Capacitance		C _{ies}	V _{CE} = 10V, V _{GE} = 0, f = 1MHz	_	4950	—	pF
Switching Time	Turn-on Delay Time	t _{d (on)}	Inductive Load $V_{CC} = 900V$ $I_C = 50A$ $V_{GE} = \pm 15V$ $R_G = 24\Omega$ (Note 1)	_	0.08	0.16	- μs
	Rise Time	t _r		—	0.12	0.24	
	Turn-on Time	t _{on}		—	0.40	0.80	
	Turn-off Delay Time	t _{d (off)}		_	0.20	0.40	
	Fall Time	t _f		—	0.15	0.30	
	Turn-off Time	t _{off}		—	0.50	1.00	
Forward Voltage		V _F	$I_{F} = 50A, V_{GE} = 0$	_	2.30	3.00	V
Reverse Recovery Time		t _{rr}	I _F = 50A, V _{GE} = -10V di/dt = 100A/μs (Note 1)		0.08	0.15	μs
Thermal Resistance		R _{th (j - c)}	Transistor	_	—	0.45	°C/W
			Diode	—	—	0.90	

Note 1 Switching Time and Reverse Recovery Time Test Circuit & Timing Chart.



Note 2 Silicone Grease is Applied.





TYPICAL INVERTER PHASE CURRENT AT TCASE = 80 °C



TYPICAL SWITCHING ENERGY (IC)



600 V Types





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