TOSHIBA GTR Module　Silicon N Channel IGBT
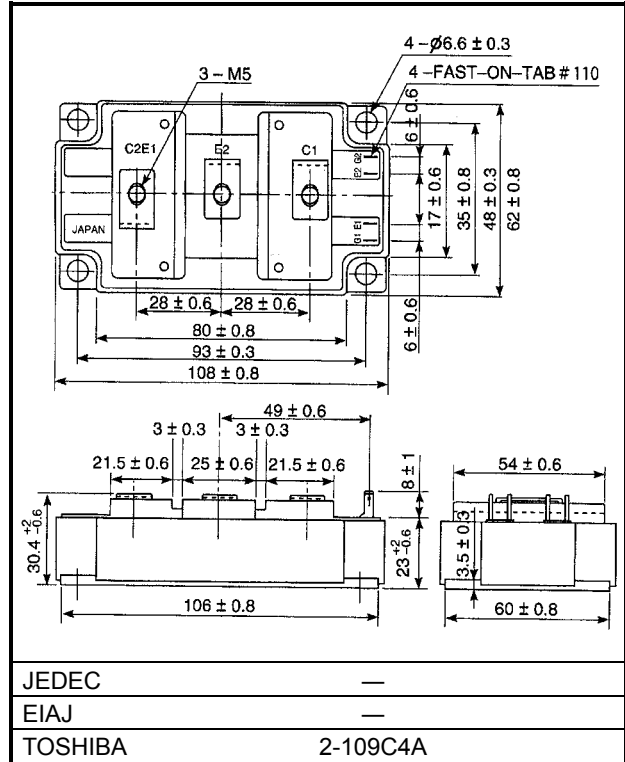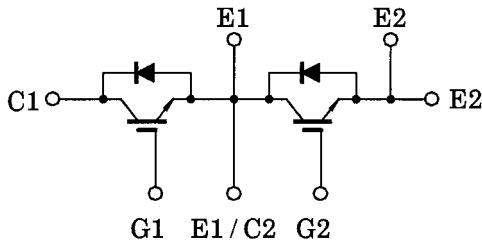
MG150Q2YS51

High Power Switching Applications

Motor Control Applications

Unit: mm

- High input impedance
- High speed ： $t_f = 0.3\mu s$ (Max)
  @Inductive Load
- Low saturation voltage
  ： $V_{CE\ (sat)} = 3.6V$ (Max)
- Enhancement-mode
- Includes a complete half bridge in one package.
- The electrodes are isolated from case.

Equivalent Circuit

JEDEC	—
EIAJ	—
TOSHIBA	2-109C4A

Weight: 430g

Maximum Ratings (Ta = 25°C)

Characteristic		Symbol	Rating	Unit
Collector-emitter voltage		V_{CES}	1200	V
Gate-emitter voltage		V_{GES}	±20	V
Collector current	DC	I_C (25°C / 80°C)	200 / 150	A
	1ms	I_{CP} (25°C / 80°C)	400 / 300	
Forward current	DC	I_F	150	A
	1ms	I_{FM}	300	
Collector power dissipation (Tc = 25°C)		P_C	1250	W
Junction temperature		T_j	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

Electrical Characteristics (Ta = 25°C)

Characteristic		Symbol	Test Condition		Min	Typ.	Max	Unit
Gate leakage current		I_{GES}	$V_{GE} = \pm20V$, $V_{CE} = 0$		—	—	±500	nA
Collector cut-off current		I_{CES}	$V_{CE} = 1200V$, $V_{GE} = 0$		—	—	2.0	mA
Gate-emitter cut-off voltage		$V_{GE (off)}$	$I_C = 150mA$, $V_{CE} = 5V$		3.0	—	6.0	V
Collector-emitter saturation voltage		$V_{CE (sat)}$	$I_C = 150A$, $V_{GE} = 15V$	$T_j = 25°C$	—	2.8	3.6	V
				$T_j = 125°C$	—	3.1	4.0	
Input capacitance		C_{ies}	$V_{CE} = 10V$, $V_{GE} = 0$, $f = 1MHz$		—	18.0	—	nF
Switching time	Turn-on delay time	$t_{d(on)}$	Inductive load $V_{CC} = 600V$ $I_C = 150A$ $V_{GE} = \pm15V$ $R_G = 5.6\Omega$ (Note 1)		—	0.05	—	µs
	Rise time	t_r			—	0.05	—	
	Turn-on time	t_{on}			—	0.2	—	
	Turn-off delay time	$t_{d(off)}$			—	0.5	—	
	Fall time	t_f			—	0.1	0.3	
	Turn-off time	t_{off}			—	0.6	—	
Forward voltage		V_F	$I_F = 150A$, $V_{GE} = 0$		—	2.4	3.5	V
Reverse recovery time		t_{rr}	$I_F = 150A$, $V_{GE} = -10V$ $di / dt = 700A / µs$ (Note 1)		—	0.1	0.25	µs
Thermal resistance		$R_{th (j-c)}$	Transistor stage		—	—	0.1	°C / W
			Diode stage		—	—	0.24	

Note 1: Switching time and reverse recovery time test circuit & timing chart