TOSHIBA Insulated Gate Bipolar Transistor Silicon N Channel IGBT

GT8G132

Strobe Flash Applications

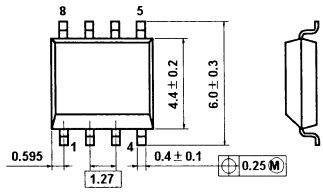
- Supplied in compact and thin package requires only a small mounting area
- 5th generation (trench gate structure) IGBT
- Enhancement-mode
- 4-V gate drive voltage: V_{GE} = 4.0 V (min) (@I_C = 150 A)
- Peak collector current: I_C = 150 A (max)

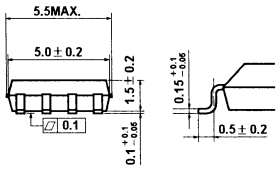
Maximum Ratings (Ta = 25°C)

Characteristics		Symbol	Rating	Unit
Collector-emitter voltage		V_{CES}	400	V
Gate-emitter voltage	DC	V_{GES}	±6	V
	Pulse	V_{GES}	±8	
Collector current	DC	I_C	8	A
	1 ms	I_{CP}	150	
Collector power dissipation (Note 1)		P_C	1.1	W
Junction temperature		T_j	150	°C
Storage temperature range		T_{stg}	−55~150	°C

Note 1: Drive operation: Mount on glass epoxy board [1 $inch^2$ × 1.5 t]

Unit: mm



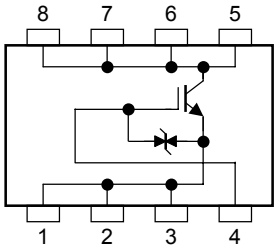


1, 2, 3 EMITTER
4 GATE
5, 6, 7, 8 COLLECTOR

JEDEC	—
JEITA	—
TOSHIBA	2-6J1C

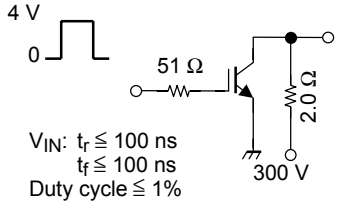
Weight: 0.080 g (typ.)

Equivalent Circuit



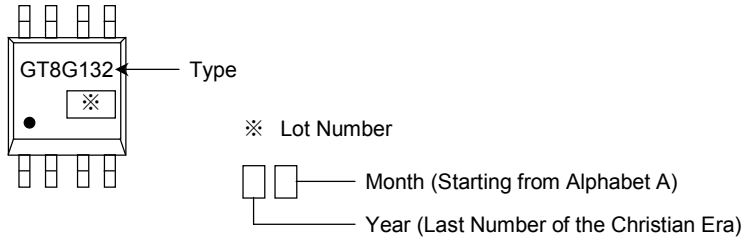
These devices are MOS type. Users should follow proper ESD handling procedures.
Operating condition of turn-off dv/dt should be lower than 400 V/μs.

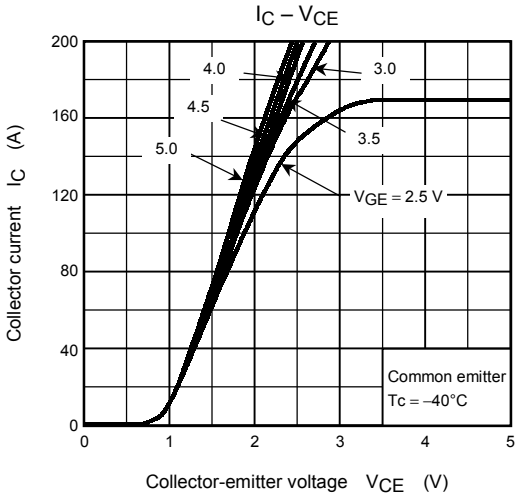
Electrical Characteristics (Ta = 25°C)

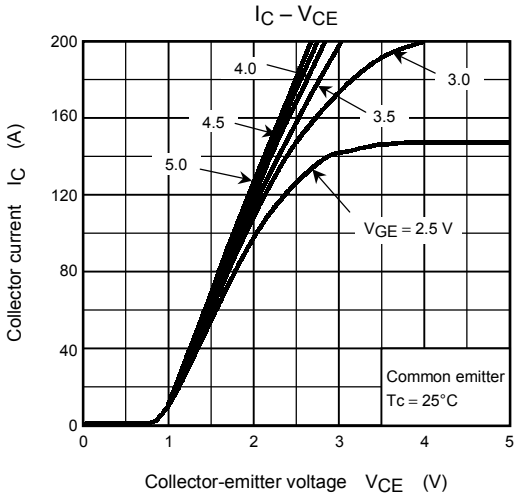
Characteristics		Symbol	Test Condition	Min	Typ.	Max	Unit
Gate leakage current		I_{GES}	V_{GE} = ±6 V, V_{CE} = 0	—	—	±10	μA
Collector cut-off current		I_{CES}	V_{CE} = 400 V, V_{GE} = 0	—	—	10	μA
Gate-emitter cut-off voltage		$V_{GE\ (OFF)}$	I_C = 1 mA, V_{CE} = 5 V	0.6	—	1.2	V
Collector-emitter saturation voltage		$V_{CE\ (sat)}$	I_C = 150 A, V_{GE} = 4 V	—	2.3	7.0	V
Input capacitance		C_{ies}	V_{CE} = 10 V, V_{GE} = 0, f = 1 MHz	—	2800	—	pF
Switching time	Rise time	t_r		—	1.0	—	μs
	Turn-on time	t_{on}		—	1.1	—	
	Fall time	t_f		—	1.6	—	
	Turn-off time	t_{off}		—	2.2	—	
Thermal resistance	(Note 2)	$R_{th\ (j\text{-}a)}$	—	—	—	114	°C/W

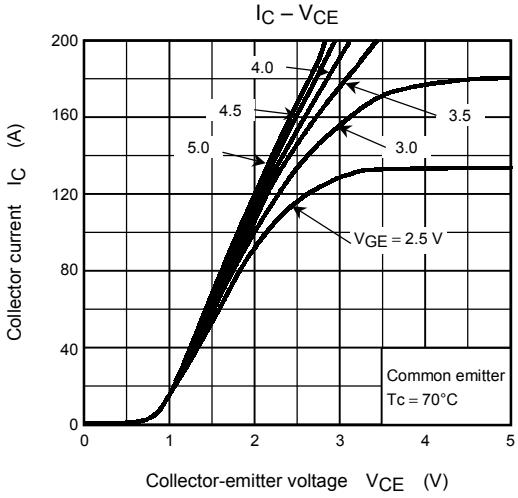
Note 2: Drive operation: Mount on glass epoxy board [1 $inch^2$ × 1.5 t]

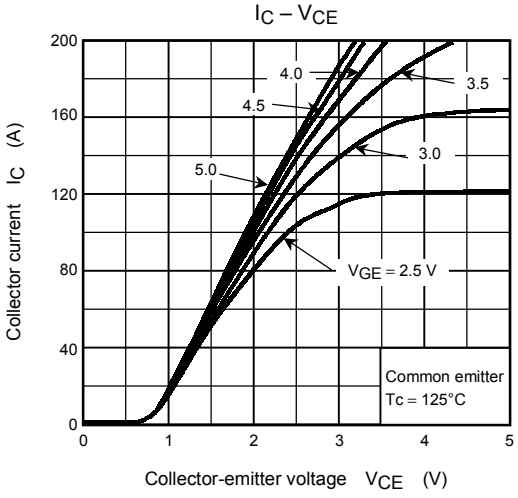
Marking

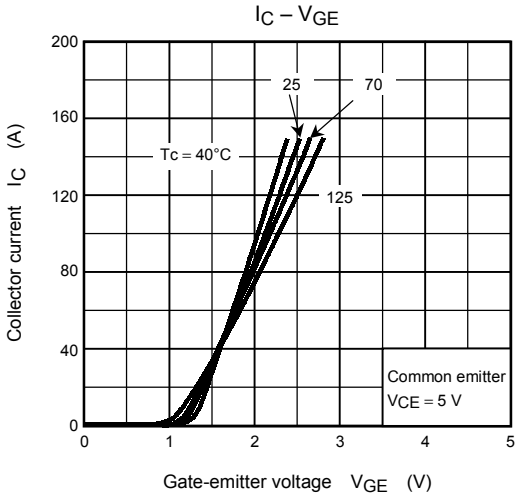


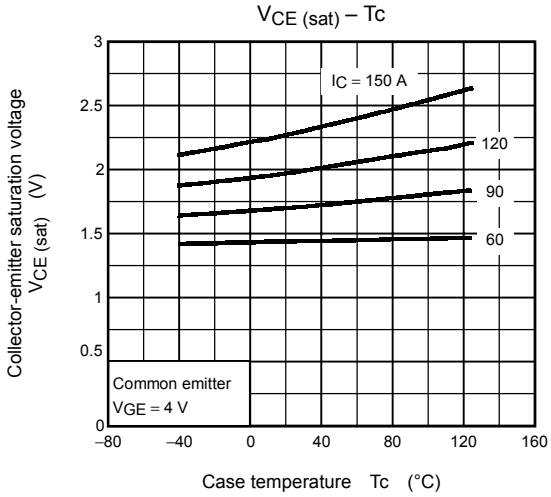

$I_C - V_{CE}$
Collector current I_C (A)
Collector-emitter voltage V_{CE} (V)
4.0
3.0
4.5
3.5
5.0
V_{GE} = 2.5 V
Common emitter
Tc = −40°C


$I_C - V_{CE}$
Collector current I_C (A)
Collector-emitter voltage V_{CE} (V)
4.0
3.0
4.5
3.5
5.0
V_{GE} = 2.5 V
Common emitter
Tc = 25°C

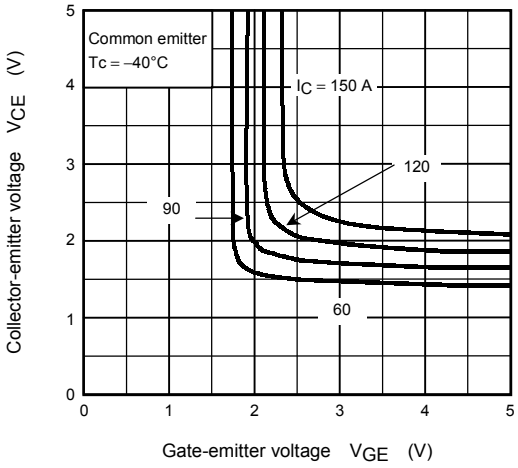

$I_C - V_{CE}$
Collector current I_C (A)
Collector-emitter voltage V_{CE} (V)
4.0
3.5
4.5
5.0
3.0
V_{GE} = 2.5 V
Common emitter
Tc = 70°C


$I_C - V_{CE}$
Collector current I_C (A)
Collector-emitter voltage V_{CE} (V)
4.0
3.5
4.5
5.0
3.0
V_{GE} = 2.5 V
Common emitter
Tc = 125°C

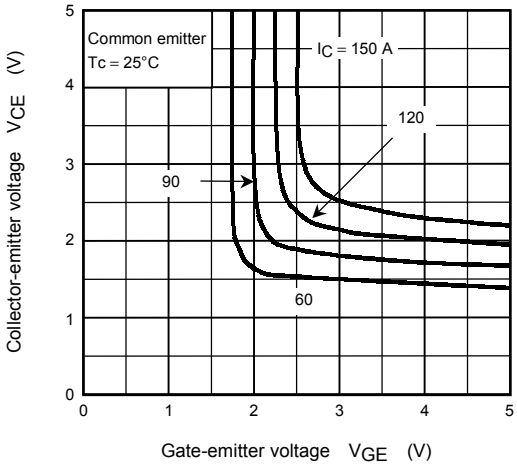

$I_C - V_{GE}$
Collector current I_C (A)
Gate-emitter voltage V_{GE} (V)
25
70
Tc = 40°C
125
Common emitter
V_{CE} = 5 V


$V_{CE\ (sat)} - Tc$
Collector-emitter saturation voltage $V_{CE\ (sat)}$ (V)
Case temperature Tc (°C)
I_C = 150 A
120
90
60
Common emitter
V_{GE} = 4 V

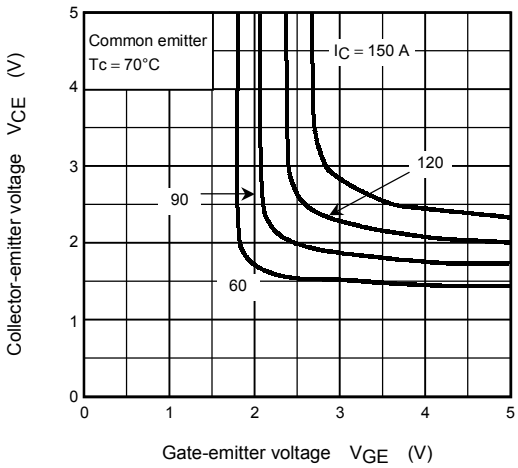
$V_{CE} - V_{GE}$



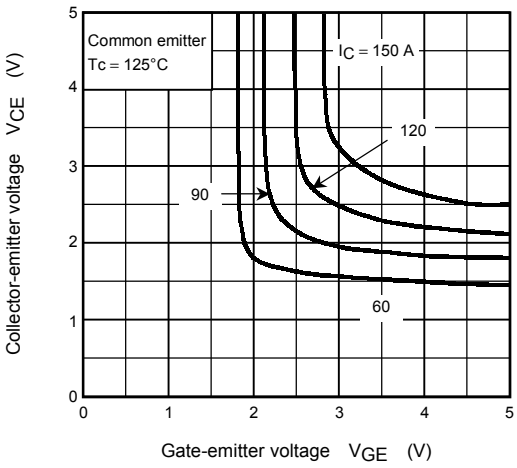
$V_{CE} - V_{GE}$



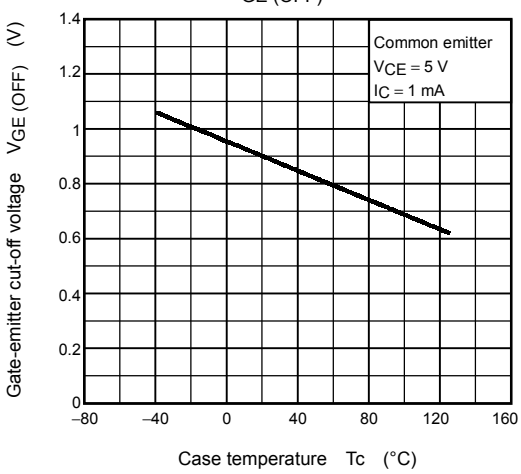
$V_{CE} - V_{GE}$



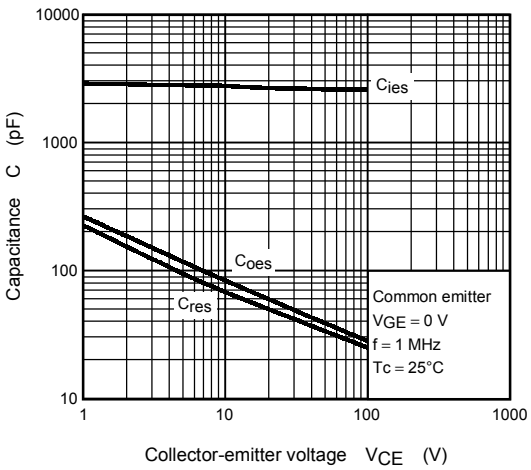
$V_{CE} - V_{GE}$



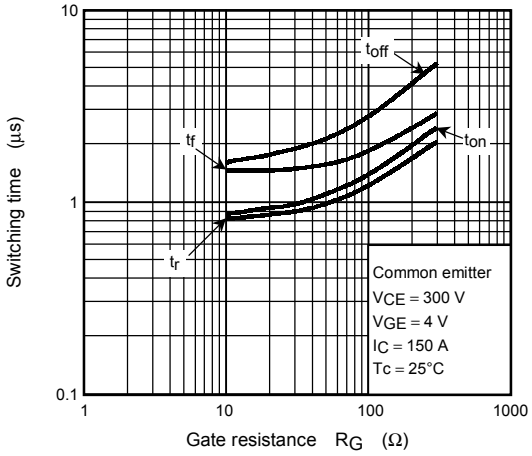
$V_{GE\ (OFF)} - Tc$



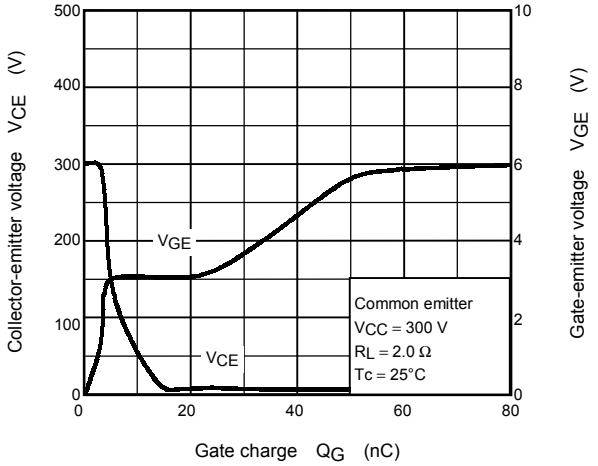
$C - V_{CE}$



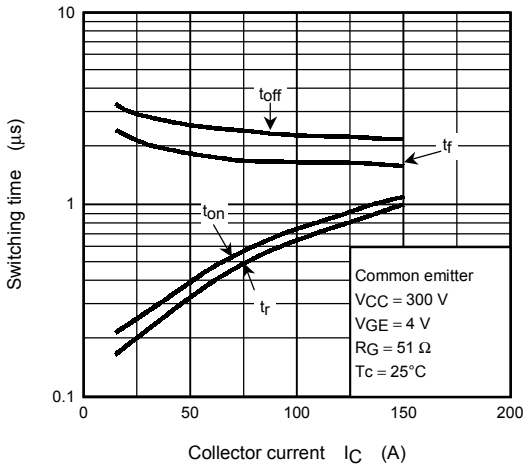
Switching Time – R_G



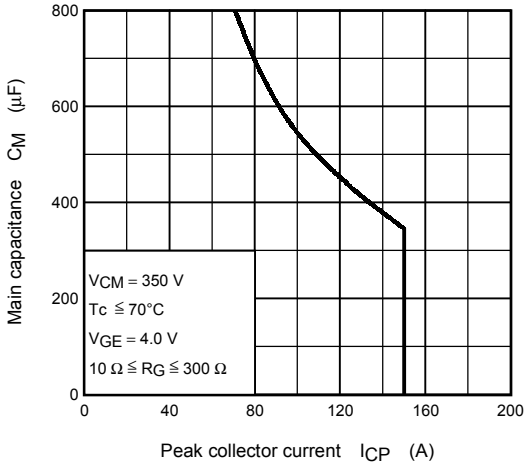
V_{CE}, V_{GE} – Q_G



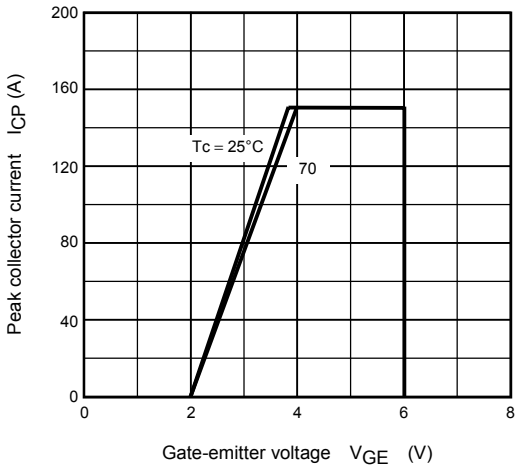
Switching Time – I_{CP}



Maximum Operating Area



Minimum Gate Drive Area



RESTRICTIONS ON PRODUCT USE

000707EAA

- TOSHIBA is continually working to improve the quality and reliability of its products. Nevertheless, semiconductor devices in general can malfunction or fail due to their inherent electrical sensitivity and vulnerability to physical stress. It is the responsibility of the buyer, when utilizing TOSHIBA products, to comply with the standards of safety in making a safe design for the entire system, and to avoid situations in which a malfunction or failure of such TOSHIBA products could cause loss of human life, bodily injury or damage to property.
  In developing your designs, please ensure that TOSHIBA products are used within specified operating ranges as set forth in the most recent TOSHIBA products specifications. Also, please keep in mind the precautions and conditions set forth in the “Handling Guide for Semiconductor Devices,” or “TOSHIBA Semiconductor Reliability Handbook” etc..
- The TOSHIBA products listed in this document are intended for usage in general electronics applications (computer, personal equipment, office equipment, measuring equipment, industrial robotics, domestic appliances, etc.). These TOSHIBA products are neither intended nor warranted for usage in equipment that requires extraordinarily high quality and/or reliability or a malfunction or failure of which may cause loss of human life or bodily injury (“Unintended Usage”). Unintended Usage include atomic energy control instruments, airplane or spaceship instruments, transportation instruments, traffic signal instruments, combustion control instruments, medical instruments, all types of safety devices, etc.. Unintended Usage of TOSHIBA products listed in this document shall be made at the customer’s own risk.
- The information contained herein is presented only as a guide for the applications of our products. No responsibility is assumed by TOSHIBA CORPORATION for any infringements of intellectual property or other rights of the third parties which may result from its use. No license is granted by implication or otherwise under any intellectual property or other rights of TOSHIBA CORPORATION or others.
- The information contained herein is subject to change without notice.