

GT5G133

Strobe Flash Applications

- Enhancement-mode
- Low gate drive voltage: $V_{GE} = 2.5 \text{ V (min)} (@I_C = 130 \text{ A})$
- Peak collector current: $I_C = 130 \text{ A (max)}$
- Compact and Thin (TSO-N-8) package

Absolute Maximum Ratings ($T_a = 25^\circ\text{C}$)

Characteristics	Symbol	Rating	Unit
Collector-emitter voltage	V_{CES}	400	V
Gate-emitter voltage	DC	V_{GES}	± 4
	Pulse	V_{GES}	± 5
Collector current	Pulse (Note 1)	I_{CP}	130
Collector power dissipation ($t = 10 \text{ s}$)	(Note 2a)	$P_C (1)$	0.83
	(Note 2b)	$P_C (2)$	0.69
Junction temperature	T_j	150	$^\circ\text{C}$
Storage temperature range	T_{stg}	-55 to 150	$^\circ\text{C}$

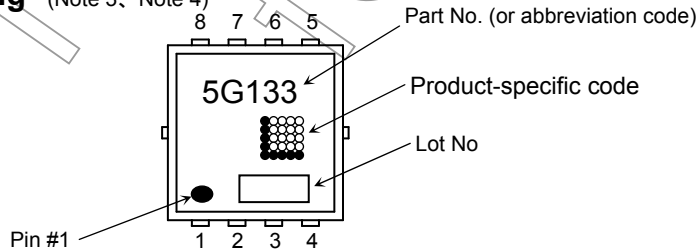
Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) are within the absolute maximum ratings.

Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/"Derating Concept and Methods") and individual reliability data (i.e. reliability test report and estimated failure rate, etc.).

Thermal Characteristics

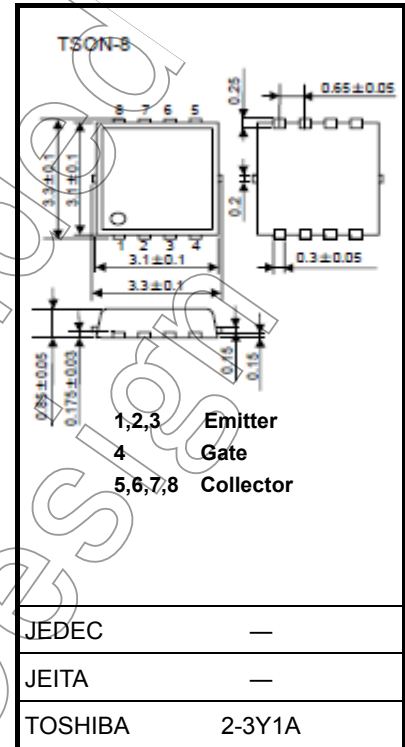
Characteristics	Symbol	Rating	Unit
Thermal resistance, junction to ambient ($t = 10 \text{ s}$) (Note2a)	$R_{th(j-a)} (1)$	150	$^\circ\text{C/W}$
Thermal resistance, junction to ambient ($t = 10 \text{ s}$) (Note2b)	$R_{th(j-a)} (2)$	180	$^\circ\text{C/W}$

Marking (Note 3, Note 4)



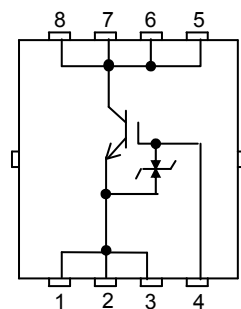
Note : For (Note 1) , (Note 2a) , (Note 2b) , (Note 3) and (Note 4) .

Unit: mm

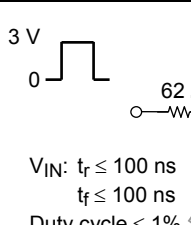


Weight: 0.02 g (Typ.)

Circuit Configuration



Electrical Characteristics (Ta = 25°C)

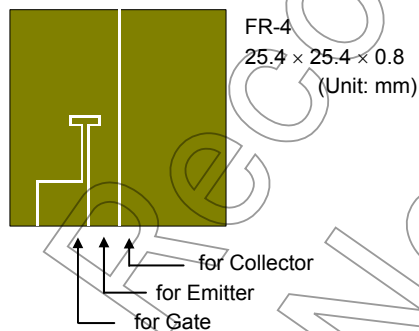
Characteristics		Symbol	Test Condition	Min.	Typ.	Max.	Unit
Gate leakage current		I_{GES}	$V_{GE} = \pm 4 \text{ V}, V_{CE} = 0$	—	—	± 10	μA
Collector cut-off current		I_{CES}	$V_{CE} = 400 \text{ V}, V_{GE} = 0$	—	—	10	μA
Gate-emitter cut-off voltage		$V_{GE}(\text{OFF})$	$I_C = 1 \text{ mA}, V_{CE} = 5 \text{ V}$	0.55	—	1.05	V
Collector-emitter saturation voltage		$V_{CE}(\text{sat})$	$I_C = 130 \text{ A}, V_{GE} = 2.5 \text{ V}$	—	3.0	—	V
Input capacitance		C_{ies}	$V_{CE} = 10 \text{ V}, V_{GE} = 0, f = 1 \text{ MHz}$	—	2480	—	pF
Switching time	Rise time	t_r	 $V_{IN}: t_r \leq 100 \text{ ns}$ $t_f \leq 100 \text{ ns}$ Duty cycle $\leq 1\%$	—	2.0	—	μs
	Turn-on time	t_{on}		—	2.1	—	
	Fall time	t_f		—	1.5	—	
	Turn-off time	t_{off}		—	2.1	—	

Note

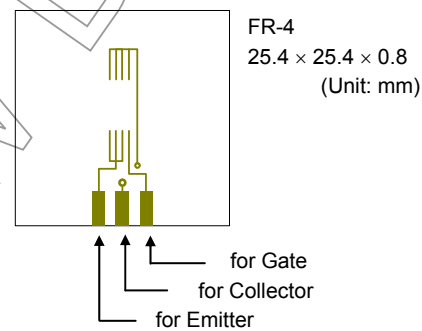
Note 1: Please use devices on condition that the junction temperature is below 150°C.

Repetitive rating: pulse width limited by maximum junction temperature.

Note 2a : Device mounted on
a glass-epoxy board (a)

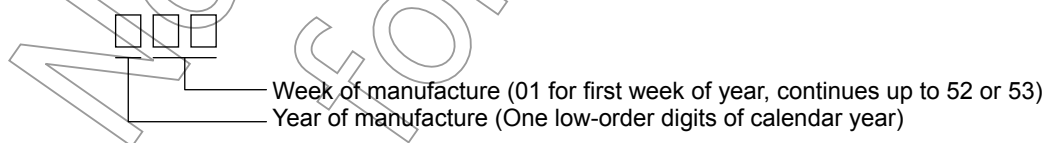


Note 2b : Device mounted on
a glass-epoxy board (b)



Note 3: ● on lower right of the marking indicates Pin 1.

* Weekly code: (Three digits)



Note 4: A line under a Lot No. identifies the indication of product Labels.

[[G]]/RoHS COMPATIBLE or [[G]]/RoHS [[Pb]]

Please contact your TOSHIBA sales representative for details as to environmental matters such as the RoHS compatibility of Product.

The RoHS is the Directive 2002/95/EC of the European Parliament and of the Council of 27 January 2003 on the restriction of the use of certain hazardous substances in electrical and electronic equipment.

Caution on handling

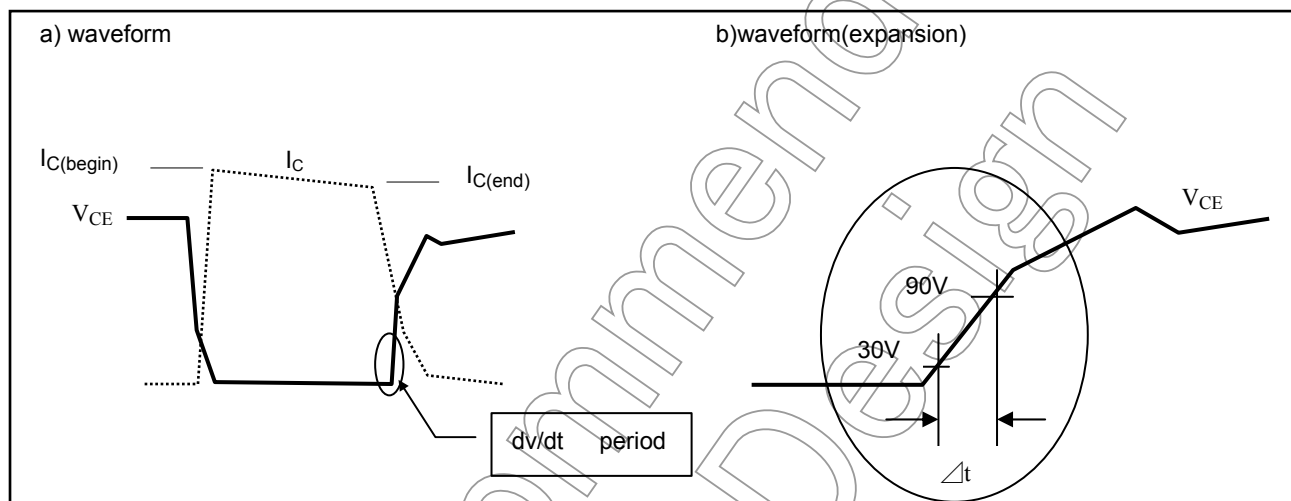
This device is MOS gate type. Therefore , please care of a protection from ESD in your handling .

Caution in design

- You should be design dv/dt value is under $400V/\mu s$ below figure.1.

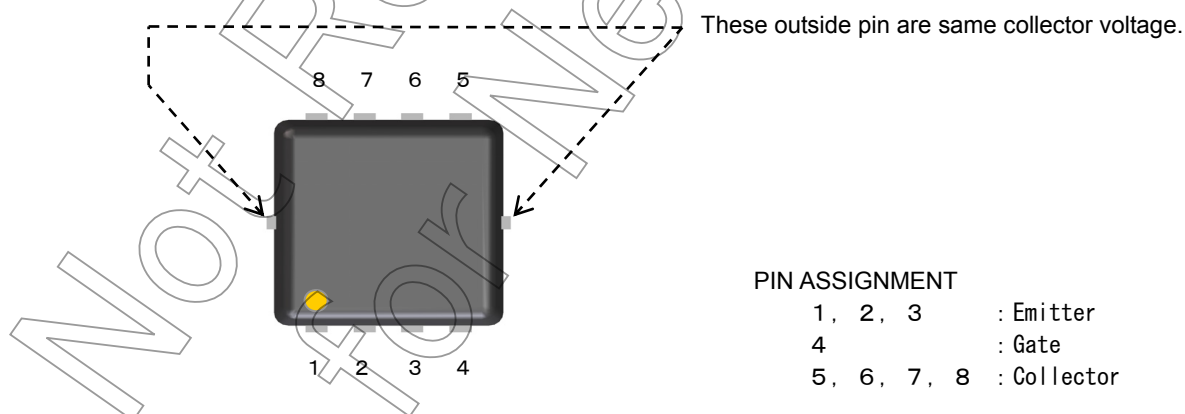
The slope of V_{CE} from 30v to 90v (attached figure.1)

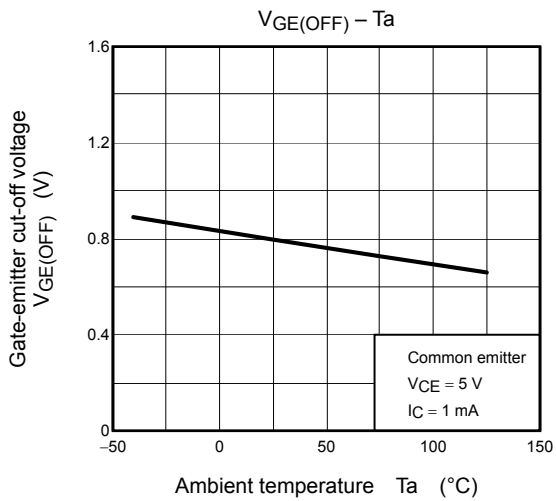
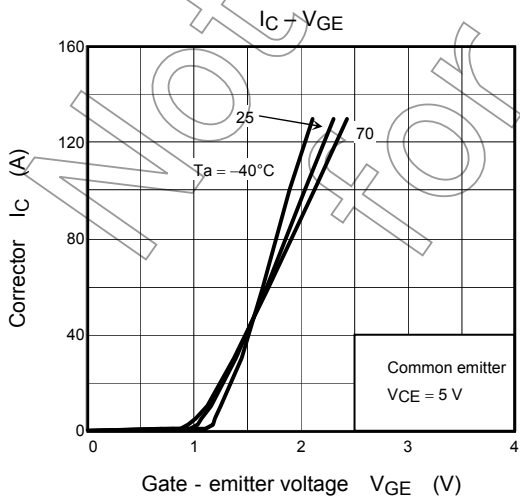
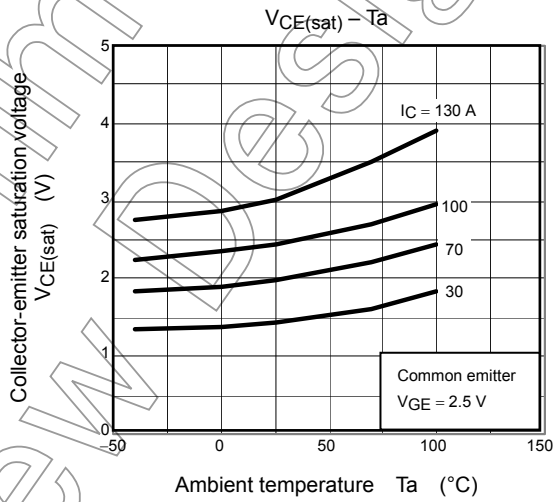
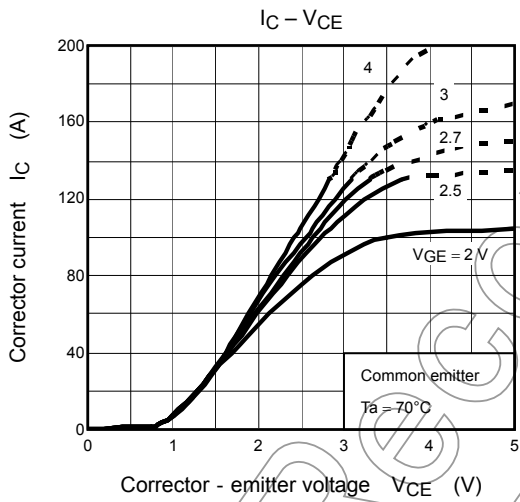
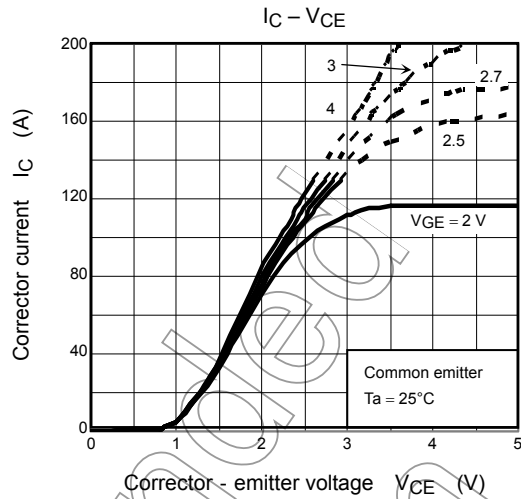
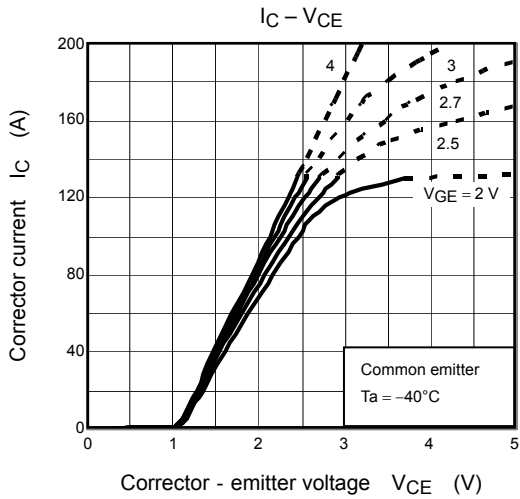
$$\begin{aligned} dv/dt &= (90V-30V) / (\Delta t) \\ &= 60V / \Delta t \end{aligned}$$

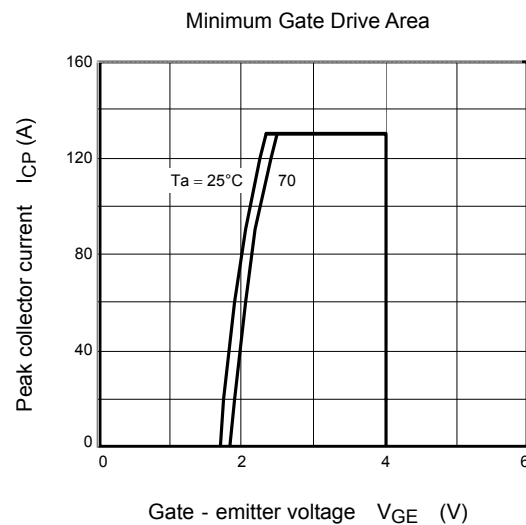
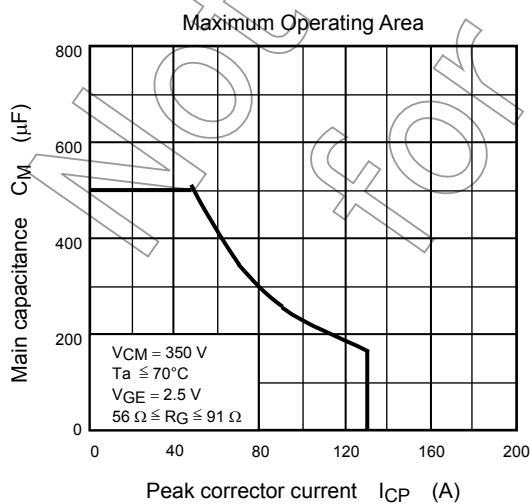
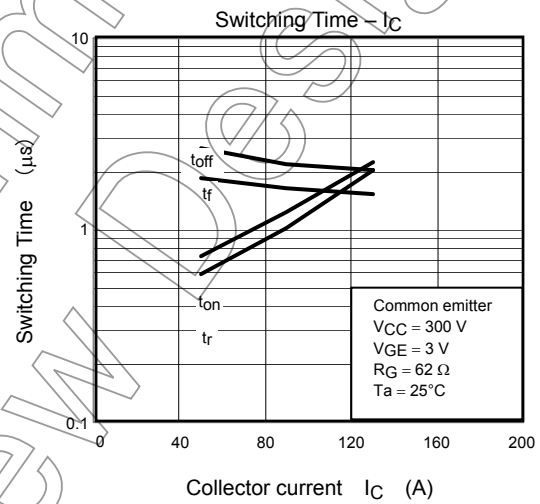
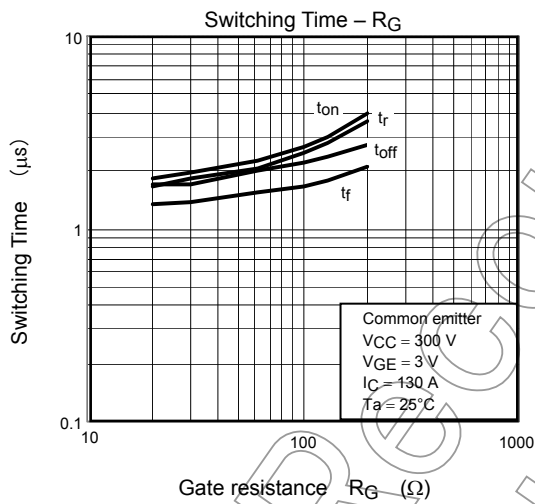
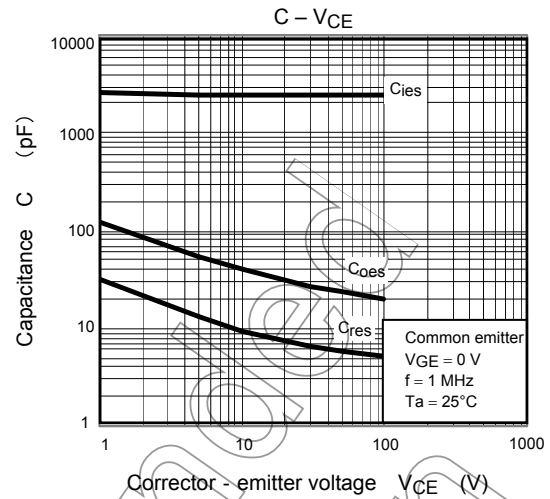
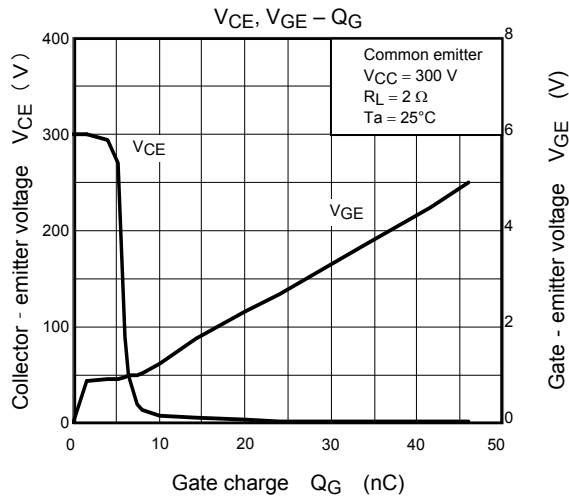


- Outside pin

Outside pin is same collector voltage.







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