



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of "Quality Parts,Customers Priority,Honest Operation,and Considerate Service",our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



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TOSHIBA Transistor Silicon NPN Triple Diffused Type

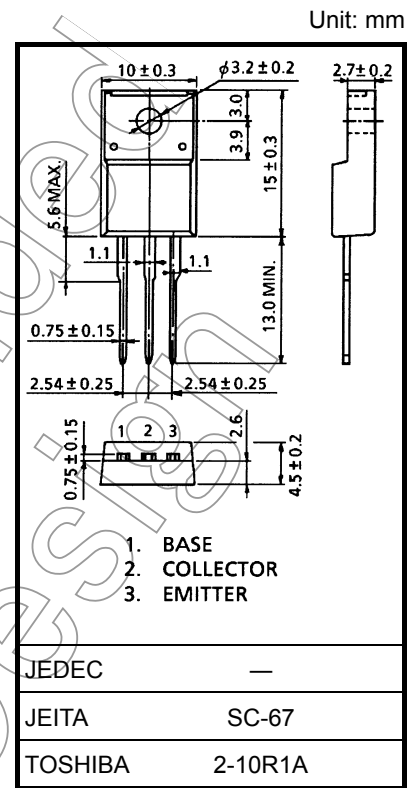
# 2SC5439

Switching Regulator Applications  
 High-Voltage Switching Applications  
 DC-DC Converter Applications  
 Inverter Lighting Applications

- Excellent switching times:  $t_r = 0.2 \mu s$  (typ.),  $t_f = 0.15 \mu s$  (typ.)
- High collector breakdown voltage:  $V_{CEO} = 450 V$

### Absolute Maximum Ratings ( $T_a = 25^\circ C$ )

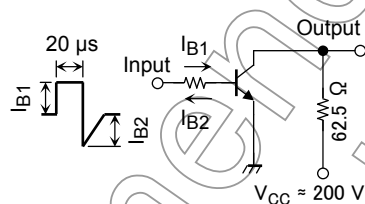
Characteristics		Symbol	Rating	Unit
Collector-base voltage		$V_{CBO}$	1000	V
Collector-emitter voltage		$V_{CEO}$	450	V
Emitter-base voltage		$V_{EBO}$	9	V
Collector current	DC	$I_C$	8	A
	Pulse	$I_{CP}$	16	
Base current		$I_B$	1	A
Collector power dissipation	$T_a = 25^\circ C$	$P_C$	2.0	W
	$T_c = 25^\circ C$		30	
Junction temperature		$T_j$	150	$^\circ C$
Storage temperature range		$T_{stg}$	-55 to 150	$^\circ C$



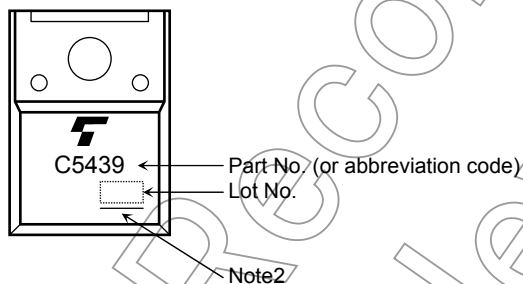
Weight: 1.7 g (typ.)

Note1: 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).

## Electrical Characteristics (Ta = 25°C)

Characteristics		Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current		$I_{CBO}$	$V_{CB} = 1000\text{ V}, I_E = 0$	—	—	100	$\mu\text{A}$
Emitter cut-off current		$I_{EBO}$	$V_{EB} = 7\text{ V}, I_C = 0$	—	—	10	$\mu\text{A}$
Collector-base breakdown voltage		$V_{(BR) CBO}$	$I_C = 1\text{ mA}, I_E = 0$	1000	—	—	V
Collector-emitter breakdown voltage		$V_{(BR) CEO}$	$I_C = 10\text{ mA}, I_B = 0$	450	—	—	V
DC current gain		$h_{FE} (1)$	$V_{CE} = 5\text{ V}, I_C = 1\text{ mA}$	10	—	—	
		$h_{FE} (2)$	$V_{CE} = 5\text{ V}, I_C = 1\text{ A}$	14	—	34	
Collector-emitter saturation voltage		$V_{CE} (sat)$	$I_C = 3.2\text{ A}, I_B = 0.64\text{ A}$	—	—	1.0	V
Base-emitter saturation voltage		$V_{BE} (sat)$	$I_C = 3.2\text{ A}, I_B = 0.64\text{ A}$	—	—	1.5	V
Switching time	Turn-on time	$t_{on}$	 <p><math>I_{B1} = 0.64\text{ A}, I_{B2} = 1.28\text{ A}</math> duty cycle <math>\leq 1\%</math></p>	—	0.2	—	$\mu\text{s}$
	Storage time	$t_{stg}$		—	2.0	3.5	
	Fall time	$t_f$		—	—	0.15	

## Marking

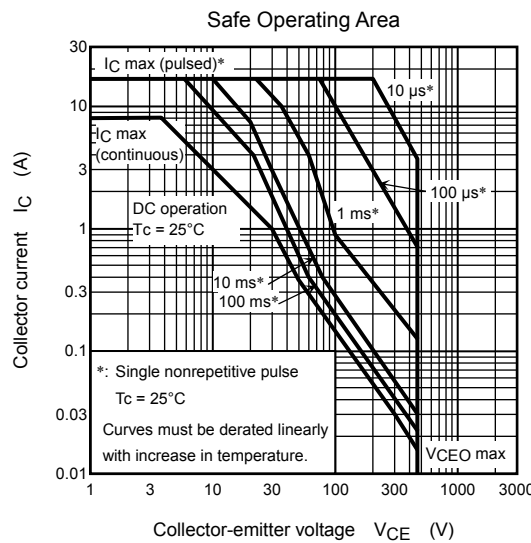
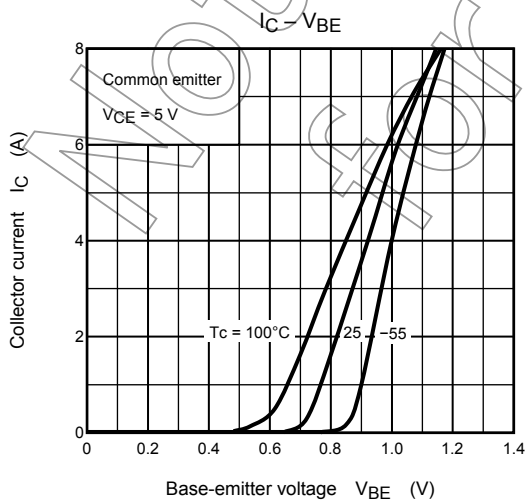
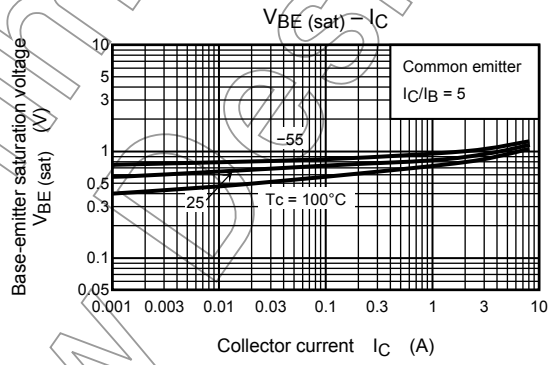
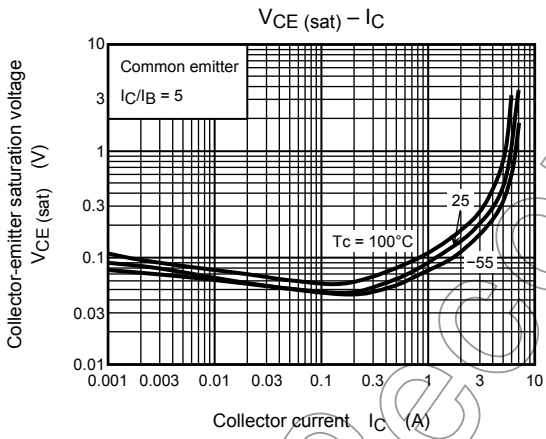
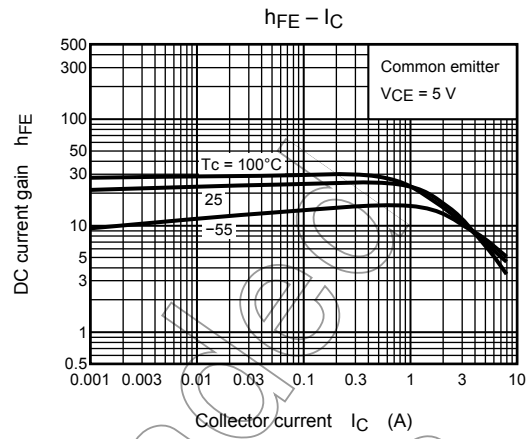
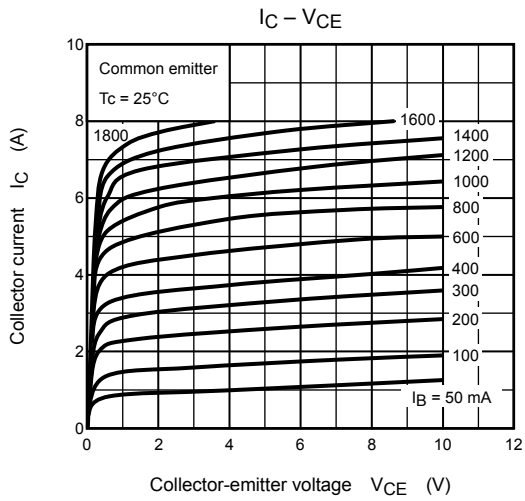


Note2: A line under a Lot No. identifies the indication of product Labels.

Not underlined:  $[[Pb]]/INCLUDES > MCV$

Underlined:  $[[G]]/RoHS COMPATIBLE$  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.



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