



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!



## Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832

Email & Skype: info@chipsmall.com Web: www.chipsmall.com

Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China



$V_{CES}$	650V
$I_{C(100^{\circ}C)}$	30A
$V_{CE(sat)}$ (Typ.)	1.6V
$P_D$	194W

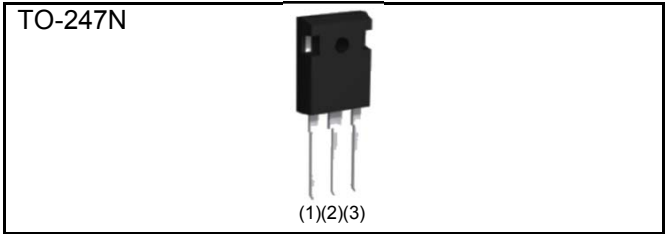
### ●Features

- 1) Low Collector - Emitter Saturation Voltage
- 2) High Speed Switching
- 3) Low Switching Loss & Soft Switching
- 4) Pb - free Lead Plating ; RoHS Compliant

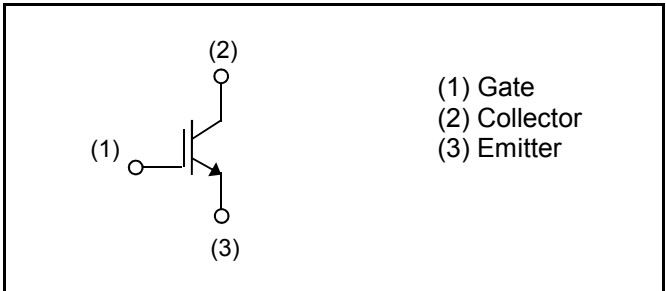
### ●Applications

- PFC
- UPS
- Power Conditioner
- IH

### ●Outline



### ●Inner Circuit



### ●Packaging Specifications

Type	Parameter	Value
	Packaging	Tube
	Reel Size (mm)	-
	Tape Width (mm)	-
	Basic Ordering Unit (pcs)	450
	Packing code	C11
	Marking	RGTH60TS65

### ●Absolute Maximum Ratings (at $T_C = 25^{\circ}C$ unless otherwise specified)

Parameter	Symbol	Value	Unit	
Collector - Emitter Voltage	$V_{CES}$	650	V	
Gate - Emitter Voltage	$V_{GES}$	$\pm 30$	V	
Collector Current	$T_C = 25^{\circ}C$	$I_C$	58	A
	$T_C = 100^{\circ}C$	$I_C$	30	A
Pulsed Collector Current	$I_{CP}^{*1}$	120	A	
Power Dissipation	$T_C = 25^{\circ}C$	$P_D$	194	W
	$T_C = 100^{\circ}C$	$P_D$	97	W
Operating Junction Temperature	$T_j$	-40 to +175	$^{\circ}C$	
Storage Temperature	$T_{stg}$	-55 to +175	$^{\circ}C$	

\*1 Pulse width limited by  $T_{jmax}$ .

### ● Thermal Resistance

Parameter	Symbol	Values			Unit
		Min.	Typ.	Max.	
Thermal Resistance IGBT Junction - Case	$R_{\theta(j-c)}$	-	-	0.77	°C/W

### ● IGBT Electrical Characteristics (at $T_j = 25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Conditions	Values			Unit
			Min.	Typ.	Max.	
Collector - Emitter Breakdown Voltage	$BV_{CES}$	$I_C = 10\mu\text{A}, V_{GE} = 0\text{V}$	650	-	-	V
Collector Cut - off Current	$I_{CES}$	$V_{CE} = 650\text{V}, V_{GE} = 0\text{V}$	-	-	10	$\mu\text{A}$
Gate - Emitter Leakage Current	$I_{GES}$	$V_{GE} = \pm 30\text{V}, V_{CE} = 0\text{V}$	-	-	$\pm 200$	nA
Gate - Emitter Threshold Voltage	$V_{GE(th)}$	$V_{CE} = 5\text{V}, I_C = 21.0\text{mA}$	4.5	5.5	6.5	V
Collector - Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 30\text{A}, V_{GE} = 15\text{V}$	-	1.6	2.1	V
		$T_j = 25^\circ\text{C}$	-	2.1	-	
		$T_j = 175^\circ\text{C}$	-			

**●IGBT Electrical Characteristics** (at  $T_j = 25^\circ\text{C}$  unless otherwise specified)

Parameter	Symbol	Conditions	Values			Unit
			Min.	Typ.	Max.	
Input Capacitance	$C_{ies}$	$V_{CE} = 30\text{V}$	-	1670	-	pF
Output Capacitance	$C_{oes}$	$V_{GE} = 0\text{V}$	-	66	-	
Reverse Transfer Capacitance	$C_{res}$	$f = 1\text{MHz}$	-	27	-	
Total Gate Charge	$Q_g$	$V_{CE} = 300\text{V}$	-	58	-	nC
Gate - Emitter Charge	$Q_{ge}$	$I_C = 30\text{A}$	-	15	-	
Gate - Collector Charge	$Q_{gc}$	$V_{GE} = 15\text{V}$	-	20	-	
Turn - on Delay Time	$t_{d(on)}$	$I_C = 30\text{A}, V_{CC} = 400\text{V}$	-	27	-	ns
Rise Time	$t_r$	$V_{GE} = 15\text{V}, R_G = 10\Omega$	-	40	-	
Turn - off Delay Time	$t_{d(off)}$	$T_j = 25^\circ\text{C}$	-	105	-	
Fall Time	$t_f$	Inductive Load	-	47	-	
Turn - on Delay Time	$t_{d(on)}$	$I_C = 30\text{A}, V_{CC} = 400\text{V}$	-	27	-	ns
Rise Time	$t_r$	$V_{GE} = 15\text{V}, R_G = 10\Omega$	-	40	-	
Turn - off Delay Time	$t_{d(off)}$	$T_j = 175^\circ\text{C}$	-	120	-	
Fall Time	$t_f$	Inductive Load	-	59	-	
Reverse Bias Safe Operating Area	RBSOA	$I_C = 120\text{A}, V_{CC} = 520\text{V}$ $V_P = 650\text{V}, V_{GE} = 15\text{V}$ $R_G = 60\Omega, T_j = 175^\circ\text{C}$	FULL SQUARE			-

●Electrical Characteristic Curves

Fig.1 Power Dissipation vs. Case Temperature

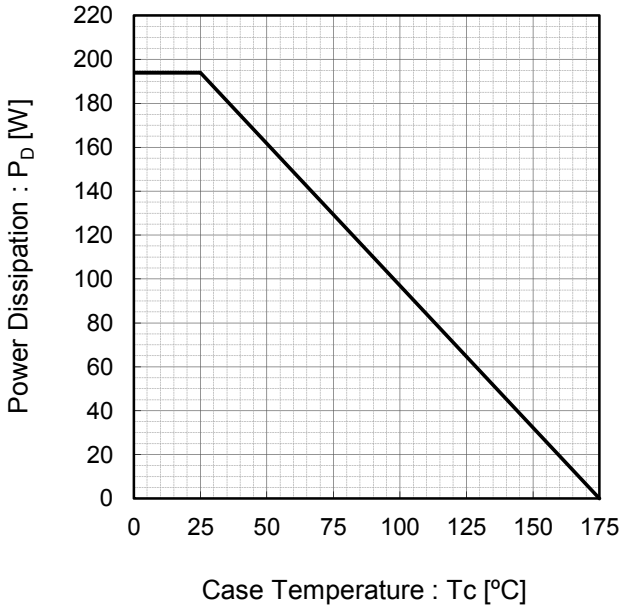


Fig.2 Collector Current vs. Case Temperature

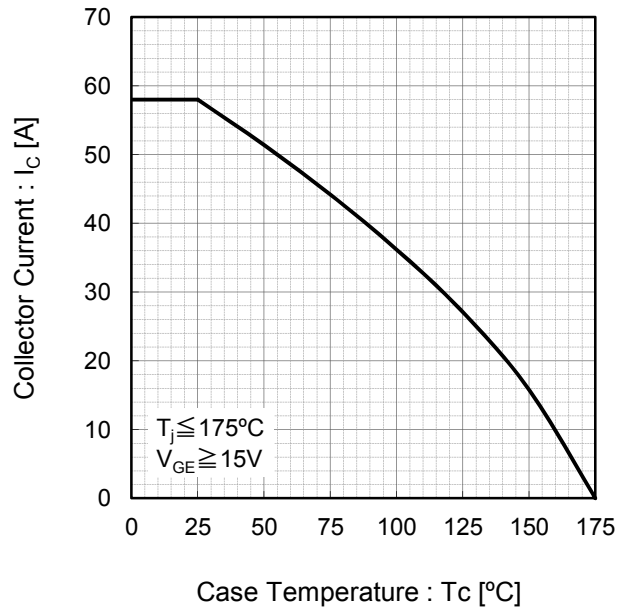


Fig.3 Forward Bias Safe Operating Area

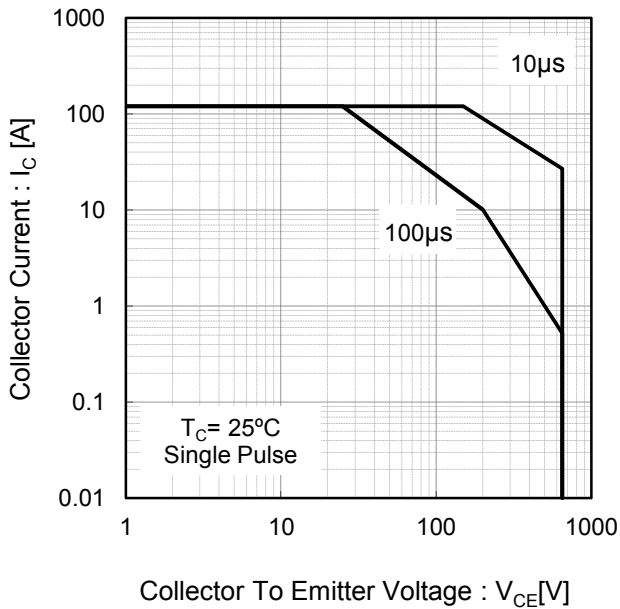
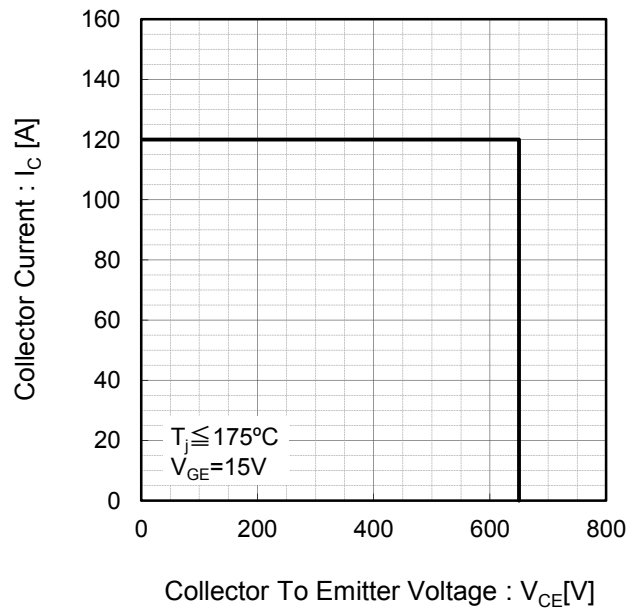


Fig.4 Reverse Bias Safe Operating Area



●Electrical Characteristic Curves

Fig.5 Typical Output Characteristics

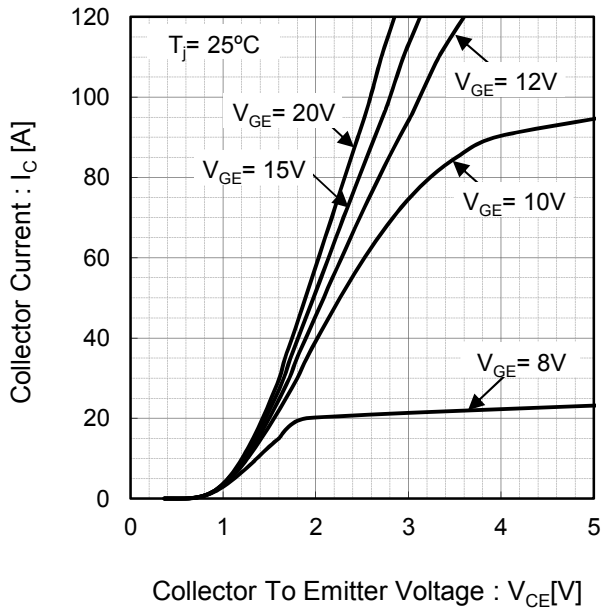


Fig.6 Typical Output Characteristics

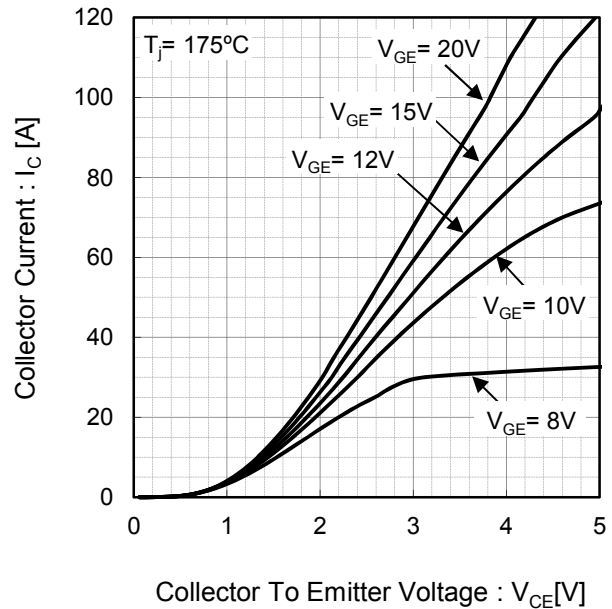


Fig.7 Typical Transfer Characteristics

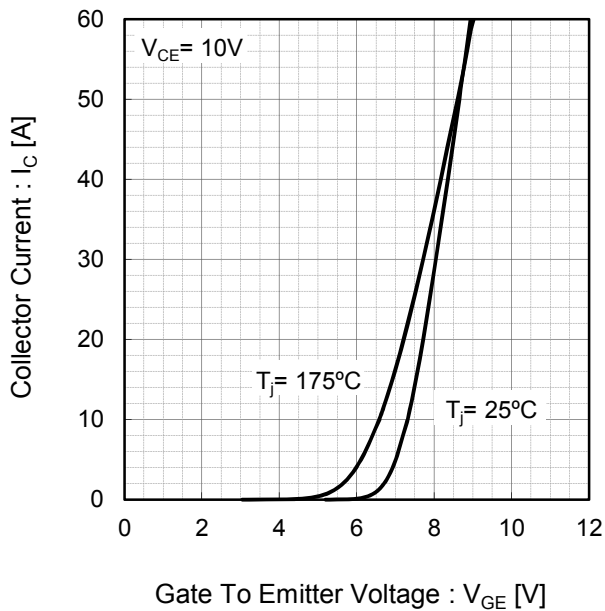
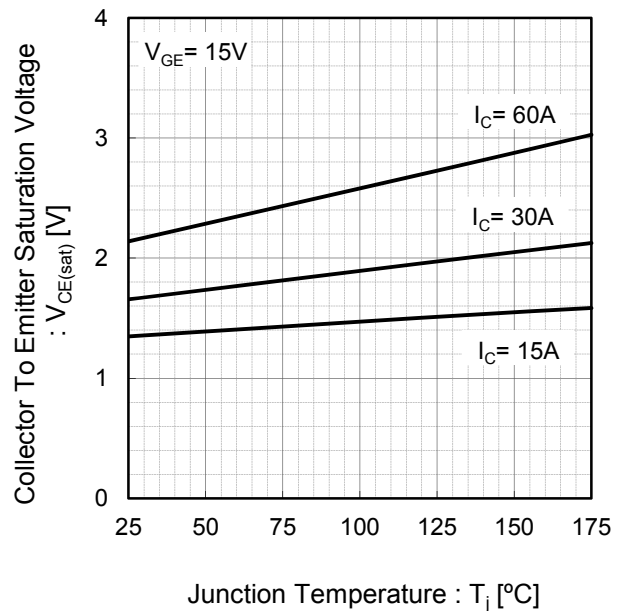


Fig.8 Typical Collector To Emitter Saturation Voltage vs. Junction Temperature



●Electrical Characteristic Curves

Fig.9 Typical Collector To Emitter Saturation Voltage vs. Gate To Emitter Voltage

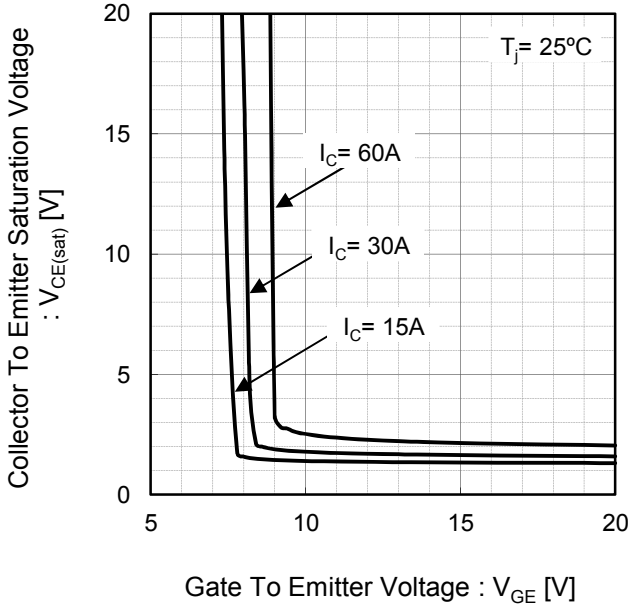


Fig.10 Typical Collector To Emitter Saturation Voltage vs. Gate To Emitter Voltage

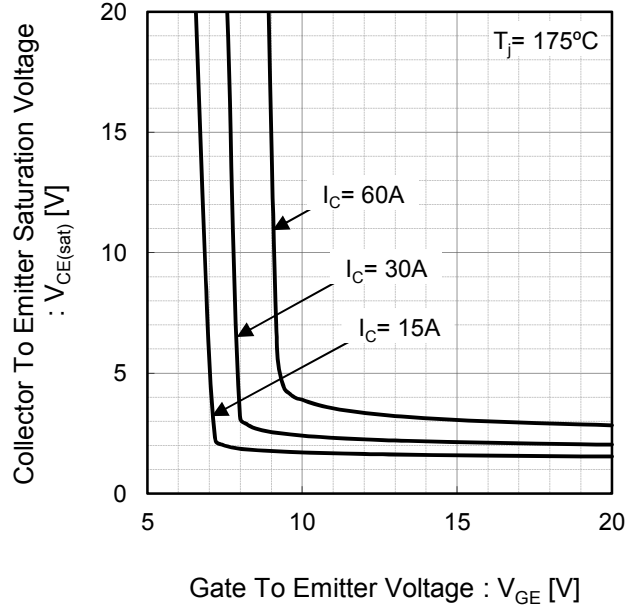


Fig.11 Typical Switching Time vs. Collector Current

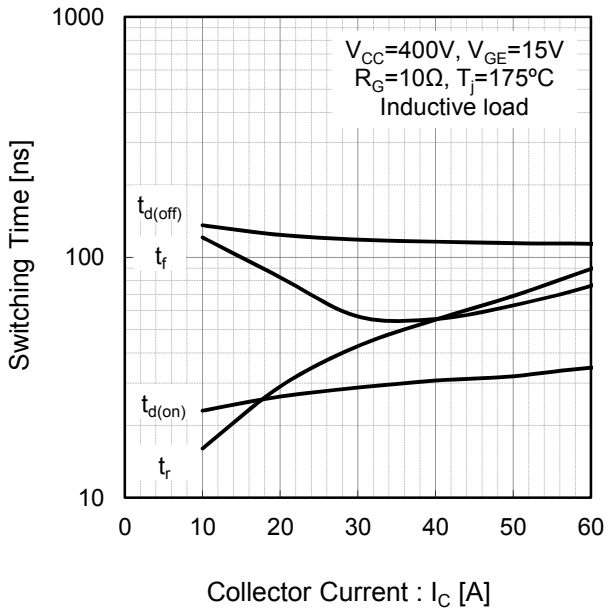
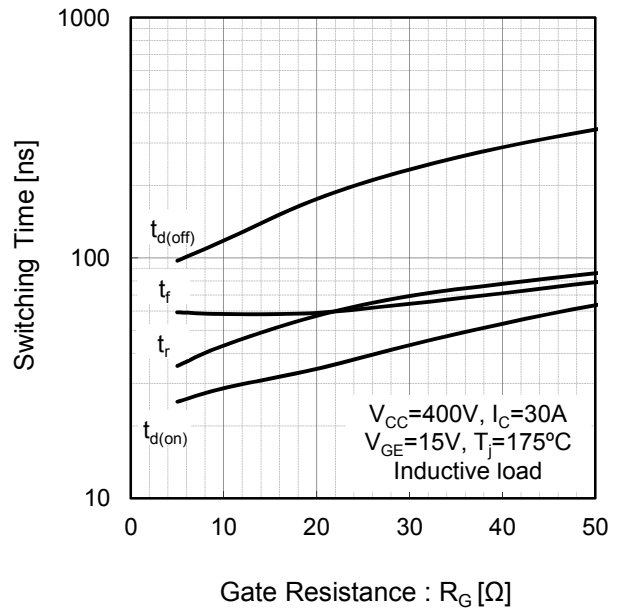


Fig.12 Typical Switching Time vs. Gate Resistance



●Electrical Characteristic Curves

Fig.13 Typical Switching Energy Losses vs. Collector Current

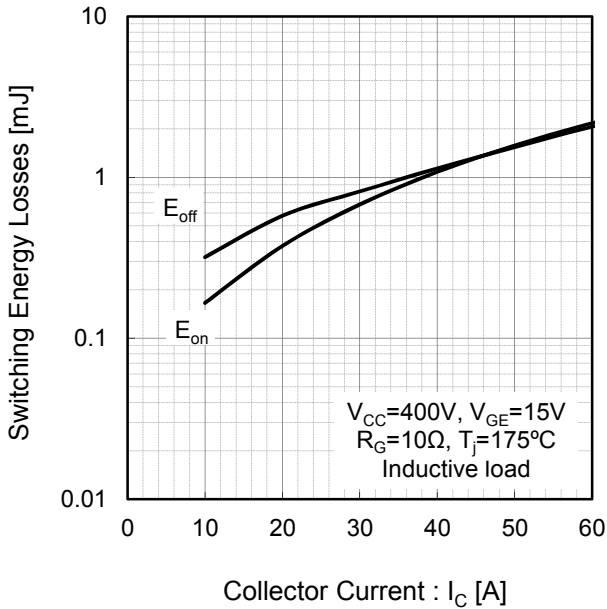


Fig.14 Typical Switching Energy Losses vs. Gate Resistance

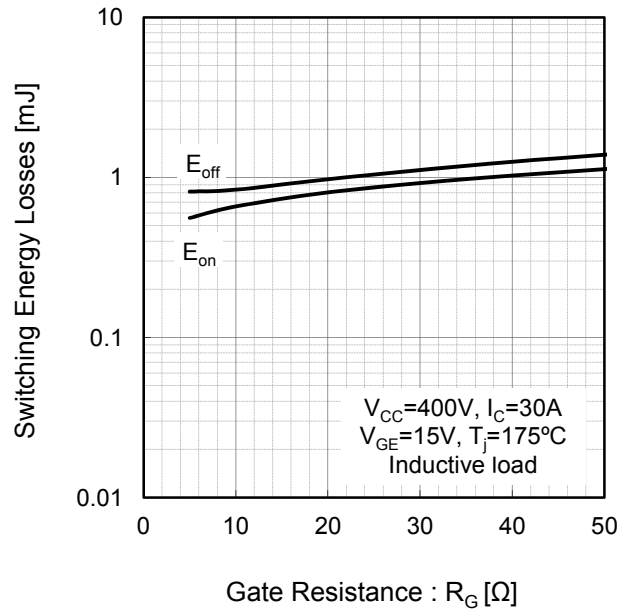


Fig.15 Typical Capacitance vs. Collector To Emitter Voltage

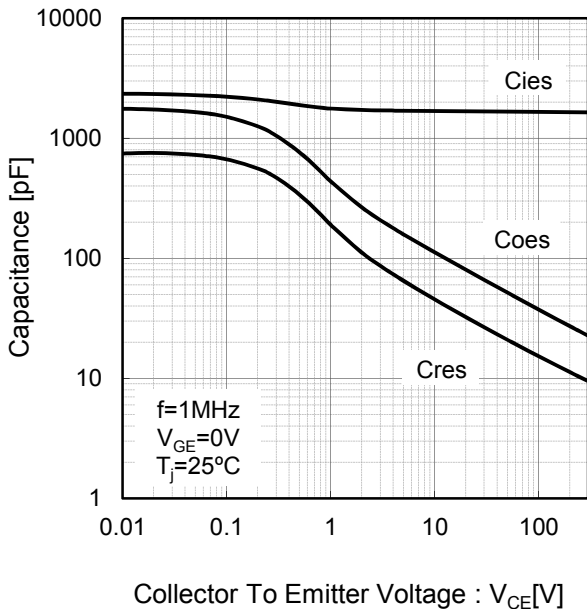
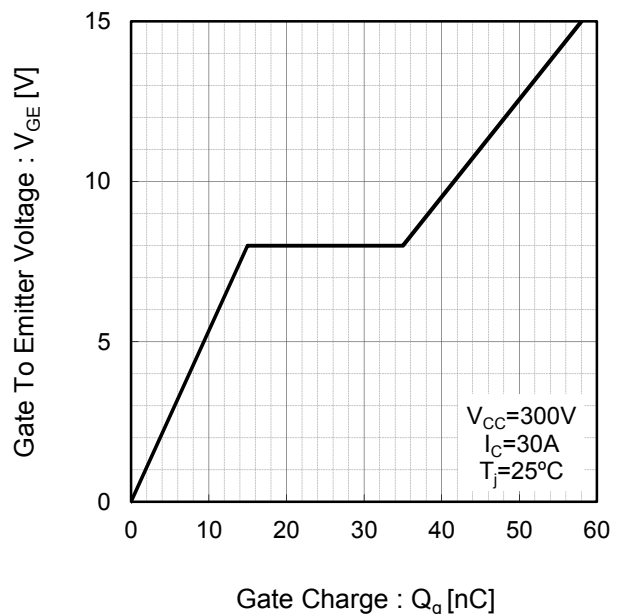


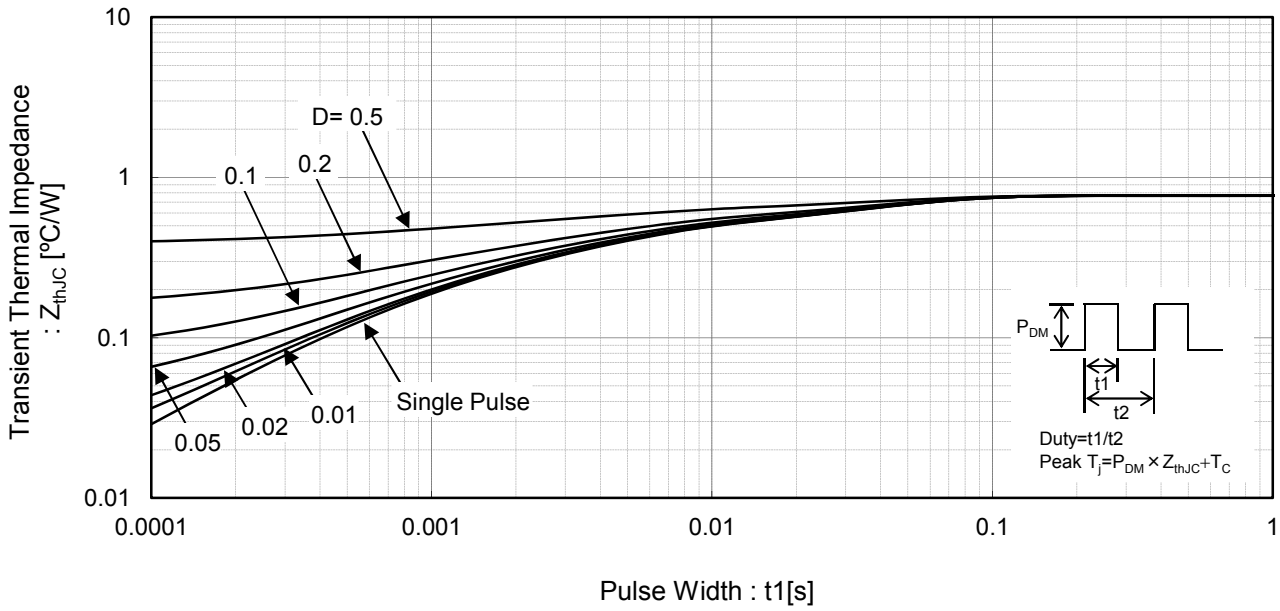
Fig.16 Typical Gate Charge





●Electrical Characteristic Curves

Fig.17 IGBT Transient Thermal Impedance



●Inductive Load Switching Circuit and Waveform

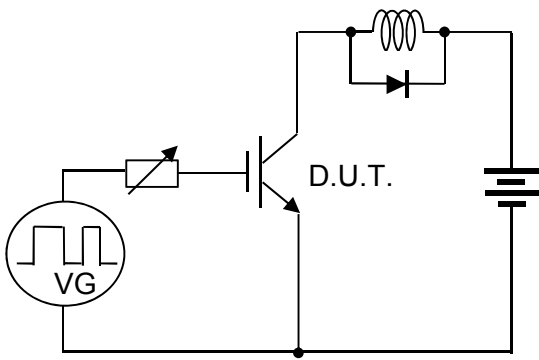


Fig.18 Inductive Load Circuit

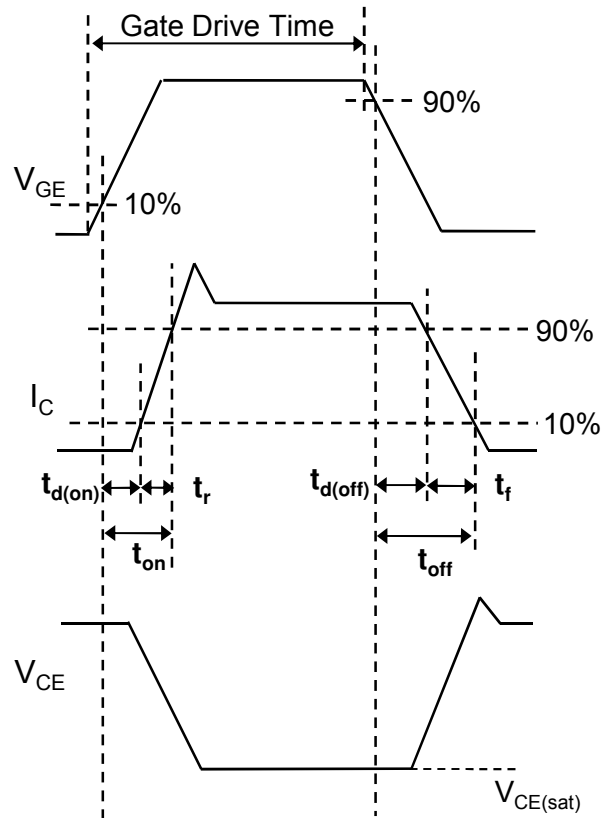


Fig.19 Inductive Load Waveform

## Notes

- 1) The information contained herein is subject to change without notice.
- 2) Before you use our Products, please contact our sales representative and verify the latest specifications :
- 3) Although ROHM is continuously working to improve product reliability and quality, semiconductors can break down and malfunction due to various factors.  
Therefore, in order to prevent personal injury or fire arising from failure, please take safety measures such as complying with the derating characteristics, implementing redundant and fire prevention designs, and utilizing backups and fail-safe procedures. ROHM shall have no responsibility for any damages arising out of the use of our Products beyond the rating specified by ROHM.
- 4) Examples of application circuits, circuit constants and any other information contained herein are provided only to illustrate the standard usage and operations of the Products. The peripheral conditions must be taken into account when designing circuits for mass production.
- 5) The technical information specified herein is intended only to show the typical functions of and examples of application circuits for the Products. ROHM does not grant you, explicitly or implicitly, any license to use or exercise intellectual property or other rights held by ROHM or any other parties. ROHM shall have no responsibility whatsoever for any dispute arising out of the use of such technical information.
- 6) The Products specified in this document are not designed to be radiation tolerant.
- 7) For use of our Products in applications requiring a high degree of reliability (as exemplified below), please contact and consult with a ROHM representative : transportation equipment (i.e. cars, ships, trains), primary communication equipment, traffic lights, fire/crime prevention, safety equipment, medical systems, servers, solar cells, and power transmission systems.
- 8) Do not use our Products in applications requiring extremely high reliability, such as aerospace equipment, nuclear power control systems, and submarine repeaters.
- 9) ROHM shall have no responsibility for any damages or injury arising from non-compliance with the recommended usage conditions and specifications contained herein.
- 10) ROHM has used reasonable care to ensure the accuracy of the information contained in this document. However, ROHM does not warrant that such information is error-free, and ROHM shall have no responsibility for any damages arising from any inaccuracy or misprint of such information.
- 11) Please use the Products in accordance with any applicable environmental laws and regulations, such as the RoHS Directive. For more details, including RoHS compatibility, please contact a ROHM sales office. ROHM shall have no responsibility for any damages or losses resulting from non-compliance with any applicable laws or regulations.
- 12) When providing our Products and technologies contained in this document to other countries, you must abide by the procedures and provisions stipulated in all applicable export laws and regulations, including without limitation the US Export Administration Regulations and the Foreign Exchange and Foreign Trade Act.
- 13) This document, in part or in whole, may not be reprinted or reproduced without prior consent of ROHM.



Thank you for your accessing to ROHM product informations.  
More detail product informations and catalogs are available, please contact us.

## ROHM Customer Support System

<http://www.rohm.com/contact/>



RGTH60TS65 - Web Page

[Distribution Inventory](#)

Part Number	RGTH60TS65
Package	TO-247N
Unit Quantity	450
Minimum Package Quantity	450
Packing Type	Bulk
Constitution Materials List	inquiry
RoHS	Yes