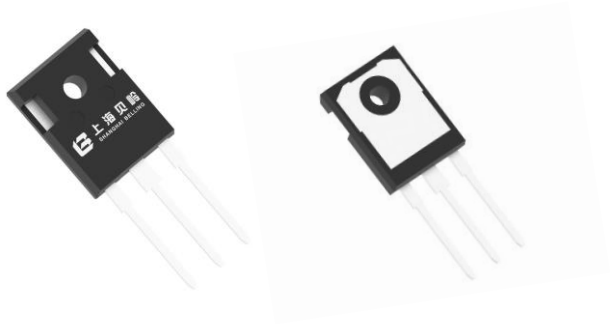
1350V IGBT BLG25R135FH5

1. Product Features

- Fast Switching
- Low $V_{CE(sat)}$
- Positive temperature coefficient
- Low EMI
- RoHS product

Key characteristics

Parameter	Value	Unit
V_{CES}	1350	V
I_C	25	A
$V_{CE(sat).typ}$	1.75	V



TO247

2. Product Applications

- Induction cooking
- Microwave ovens

3. Description

BLG25R135FH5 is obtained by advanced Trench Field Stop (T-FS) technology, This device is part of Reverse-Conducting of IGBTs, which reduces the conduction loss, improves switching performance,The IGBT is suitable device for Induction cooking, microwave ovens applications.

4. Ordering Guide

Product Number	Package	Operating Temp.	Eco Status	MSL	Minimum Pack Qty
BLG25R135FH5-F	Tube	-40~175°C	Green	NA	25/Tube

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5. Pin Description

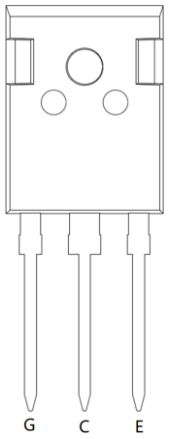


Fig 1 Pin Description

6. Specifications

6.1 Absolute Ratings

at T_C = 25°C, unless otherwise specified.

Table 1 Absolute Ratings

Symbol	Parameter	Rating	Units
V_{CES}	Collector-Emitter Voltage	1350	V
I_C	Collector Current @T_C=25°C	50	A
	Collector Current @T_C=100°C	25	A
I_{CM}	Pulsed Collector Current, tp limited by T_{Jmax}	75	A
I_F	Diode Continuous Forward Current @T_C=25°C	50	A
	Diode Continuous Forward Current @T_C=100°C	25	A
I_{FM}	Diode Maximum Forward Current, limited by T_{Jmax}	75	A
V_{GES}	Gate- Emitter Voltage	±20	V
P_D	Power Dissipation @T_C=25°C	300	W
	Power Dissipation @T_C=100°C	150	W
T_{VJ}	Operating Junction Temperature Range	-40 to 175	°C
Tstg	Storage Temperature Range	-55 to 175	°C
T_L	Maximum Temperature for Soldering	260	°C

6.2 Thermal Characteristics

Table 2 Thermal Characteristics

Symbol	Parameter	Max	Units
$R_{\theta JC}$	Junction-to-Case (IGBT)	0.5	°C/W
$R_{\theta JC}$	Junction-to-Case (Diode)	0.5	°C/W
$R_{\theta JA}$	thermal resistance, Junction-Ambient	40	°C/W

6.3 Electrical Characteristics

at T_C = 25°C, unless otherwise specified.

6.3.1 Static Characteristics

Table 3 Static Characteristics

Symbol	Parameter	Test Conditions	Values			Units
			Min.	Typ.	Max.	
V_{CES}	Collector-Emitter Breakdown Voltage	V_{GE} = 0V, I_C = 250μA	1350	--	--	V
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	V_{GE} = 15V, I_C =25A T_J=25℃ T_J=125℃ T_J=175℃	 -- -- --	 1.75 2.20 2.35	 2.05 -- --	V
$V_{GE(TH)}$	Gate Threshold Voltage	V_{CE} = V_{GE}, I_C = 1mA	5	5.8	6.5	V
V_F	Diode Forward Voltage	I_F=25A T_J=25℃ T_J=125℃ T_J=175℃	 -- -- --	 1.85 2.25 2.45	 2.35 -- --	V
I_{CES}	Collector-Emitter Leakage Current	V_{CE} = 1350V, V_{GE} = 0V	--	--	100	μA
$I_{GES(F)}$	Gate-Emitter Forward Leakage Current	V_{GE} = +20V	--	--	200	nA
$I_{GES(R)}$	Gate-Emitter Reverse Leakage Current	V_{GE} = -20V	--	--	-200	nA

Pulse width tp≤300μs, δ≤2%

6.3.2 Dynamic Characteristics

Table 4 Dynamic Characteristics

Symbol	Parameter	Test Conditions	Values			Units
			Min.	Typ.	Max.	
C_{ies}	Input Capacitance	V_{GE}=0V V_{CE}=25V f =1.0MHz	--	2341	--	pF
C_{oes}	Output Capacitance		--	54	--	
C_{res}	Reverse Transfer Capacitance		--	24	--	
Q_G	Gate charge	Vcc=1080V I_{CE}=25A V_{GE}=15V	--	113	--	nC
Q_{GE}	Gate-emitter charge		--	61	--	
Q_{GC}	Gate-collector charge		--	14	--	

6.3.3 IGBT Switching Characteristics, at T_J=25℃

Table 5 Switching Characteristics

Symbol	Parameter	Test Conditions	Values			Units
			Min.	Typ.	Max.	
$t_{d(off)}$	Turn-Off Delay Time	I_C =25A V_{CE} = 600V V_{GE} = 15V R_G =5Ω T_J=25°C	--	140	--	ns
t_f	Fall Time		--	139	--	ns
E_{off}	Turn-Off Switching Loss		--	1.0	--	mJ

6.3.4 IGBT Switching Characteristics, at T_J=175℃

Table 6 Switching Characteristics

Symbol	Parameter	Test Conditions	Values			Units
			Min.	Typ.	Max.	
$t_{d(off)}$	Turn-Off Delay Time	I_C =25A V_{CE} = 600V V_{GE} = 15V R_G =5Ω T_J=175°C	--	197	--	ns
t_f	Fall Time		--	220	--	ns
E_{off}	Turn-Off Switching Loss		--	1.50	--	mJ

6.4 Characteristics Curves

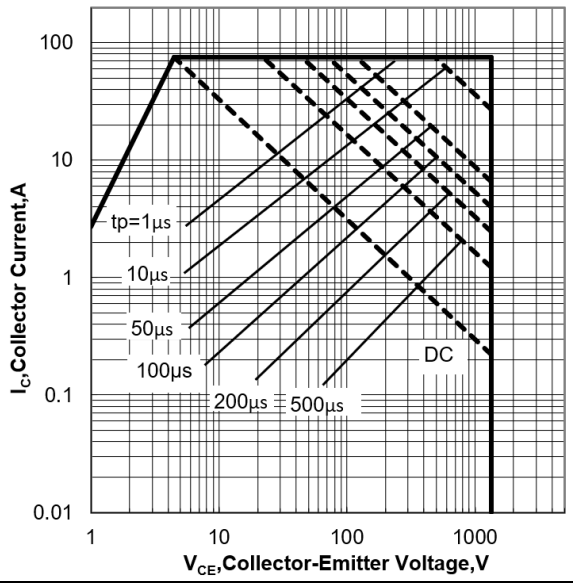


Figure 2 Forward Bias Safe Operating Area

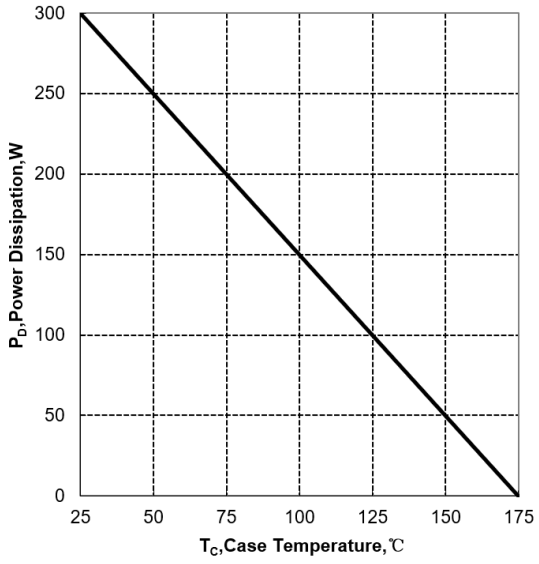


Figure 3 Power Dissipation vs Case Temperature

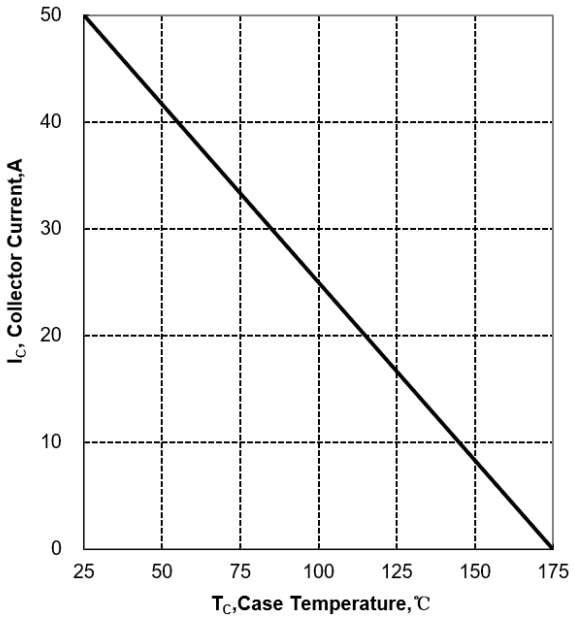


Figure 4 Collector Current vs Case Temperature

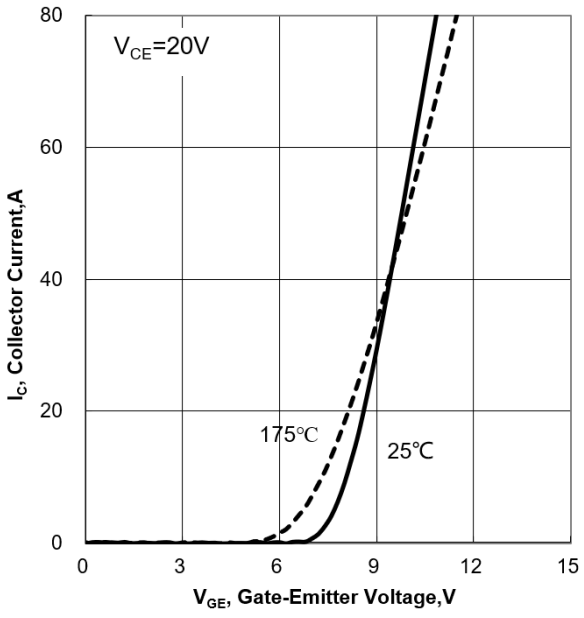


Figure 5 Typical Transfer Characteristics

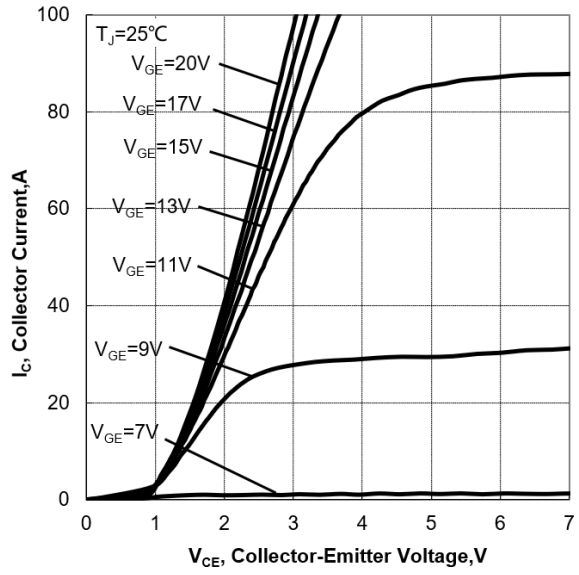


Figure 6 Typical Output Characteristics (TJ=25℃)

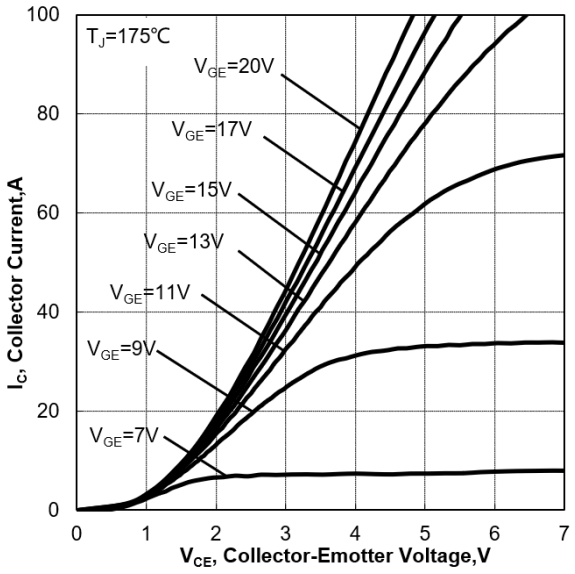


Figure 7 Typical Output Characteristics (TJ=175℃)

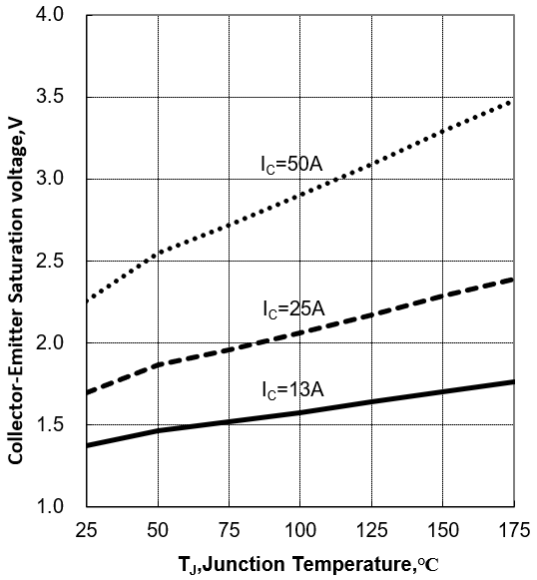


Figure 8 Typical Collector-Emitter Saturation Voltage vs Junction temperature Junction temperature

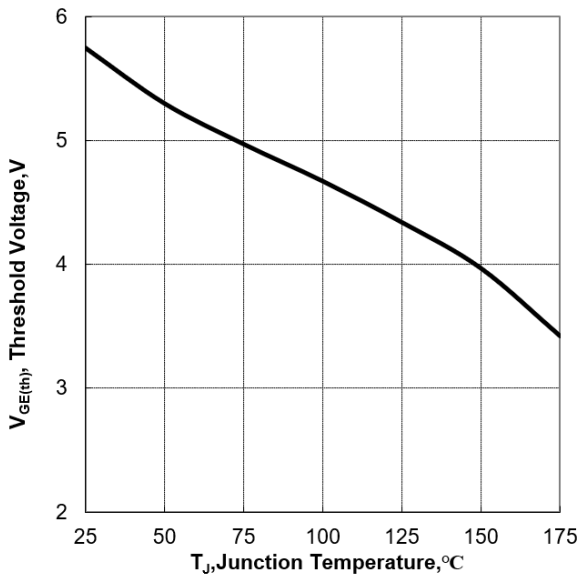


Figure 9 Threshold Voltage vs Junction Temperature

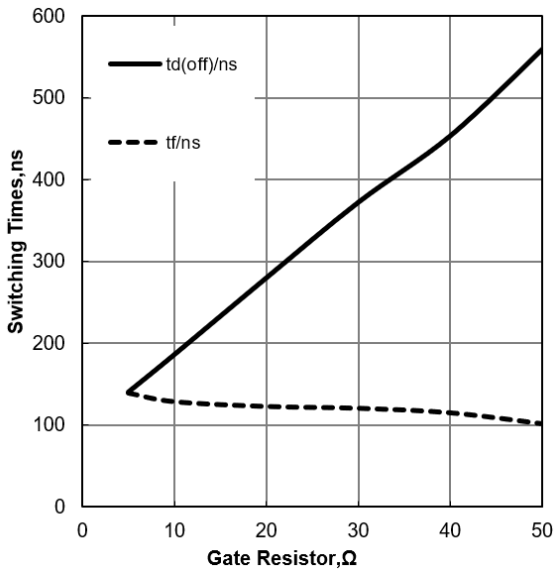


Figure 10 Typical Switching Times vs Gate Resistor
(TJ=25℃,VCE=600V, VGE=15/0V, IC=25A)

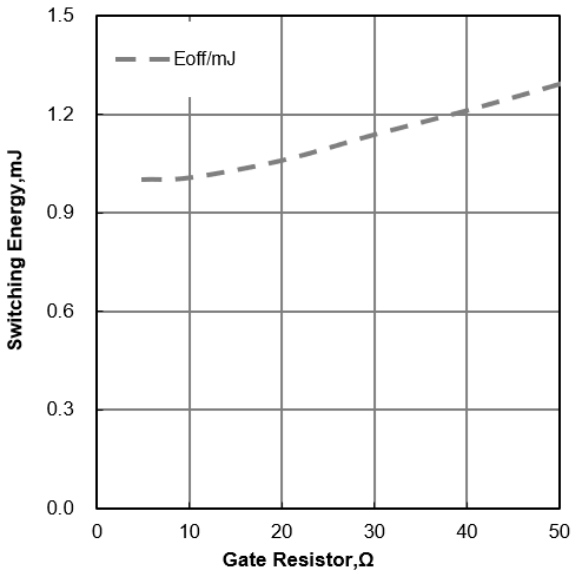


Figure 11 Typical Switching Energy vs Gate Resistor
(TJ=25℃,VCE=600V, VGE=15/0V, IC=25A)

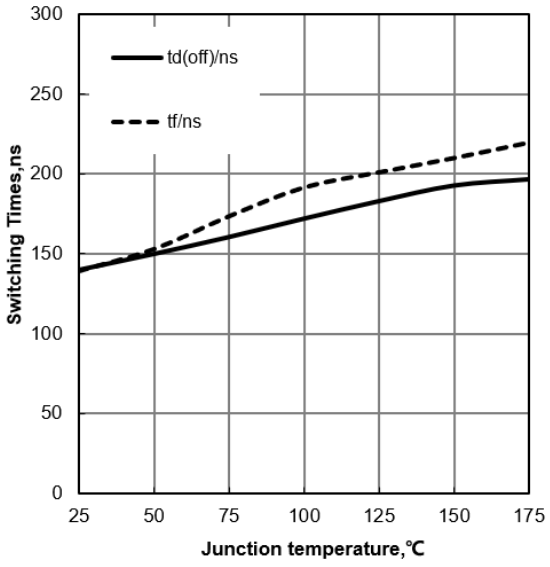


Figure 12 Typical Switching Times vs Junction Temperature
(VCE=600V, VGE=15/0V, IC=25A)

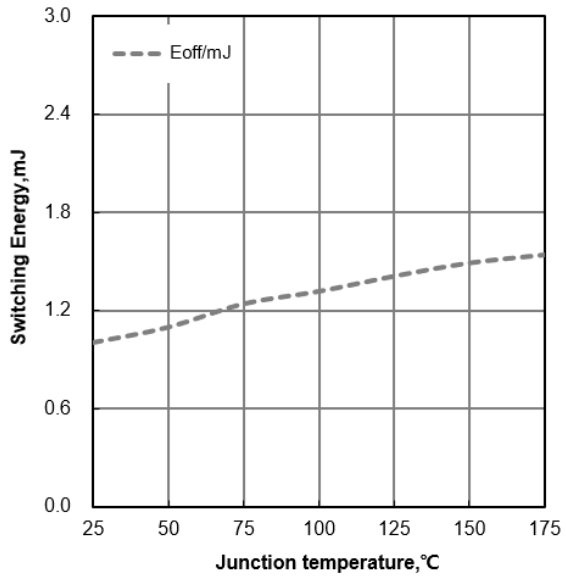


Figure 13 Typical Switching Energy vs Junction Temperature
(VCE=600V, VGE=15/0V, IC=25A)

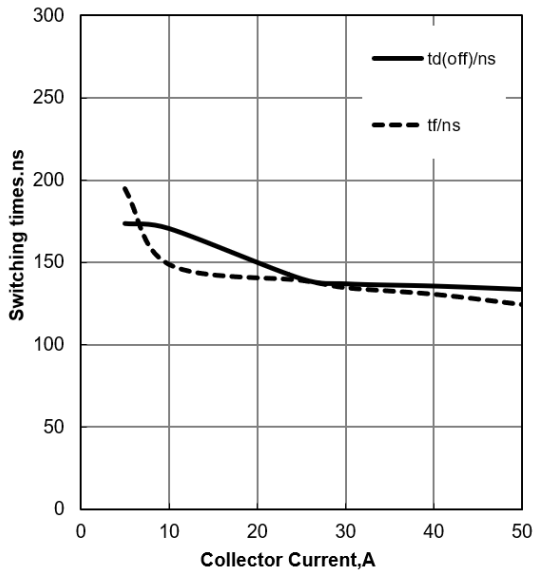


Figure 14 Typical Switching Times vs Collector Current

(TJ=25℃,VCE=600V, VGE=15/0V)

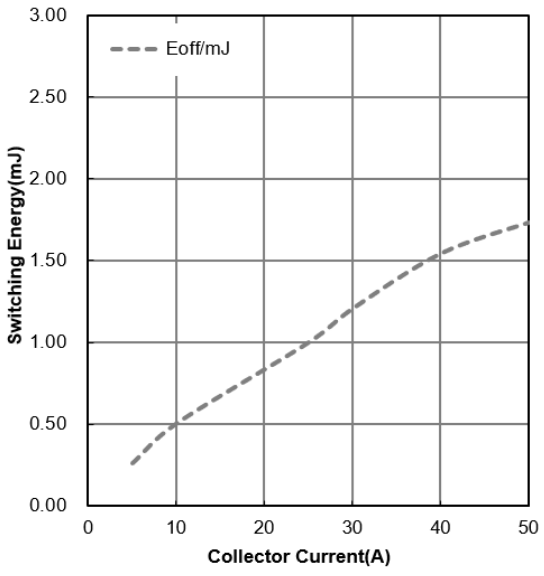


Figure 15 Typical Switching Energy vs Collector Current

(TJ=25℃,VCE=600V, VGE=15/0V)

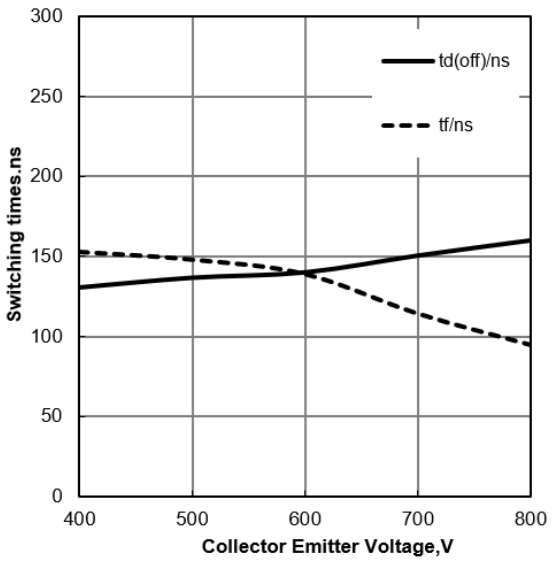


Figure 16 Typical Switching Times vs VCE (TJ=25℃,

VGE=15/0V, IC=25A)

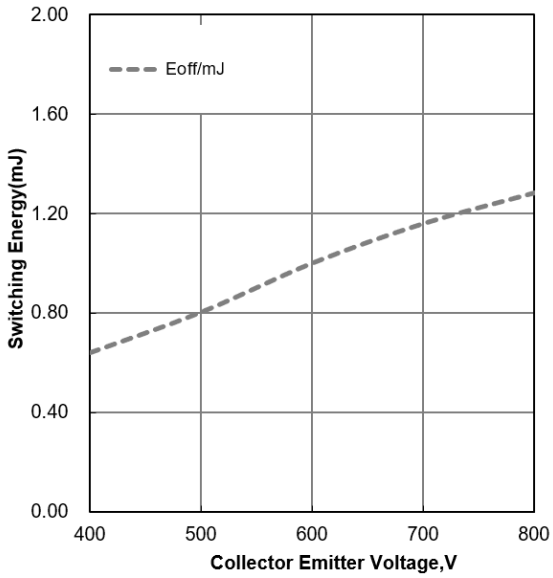


Figure 17 Typical Switching Energy vs VCE (TJ=25℃,

VGE=15/0V, IC=25A)

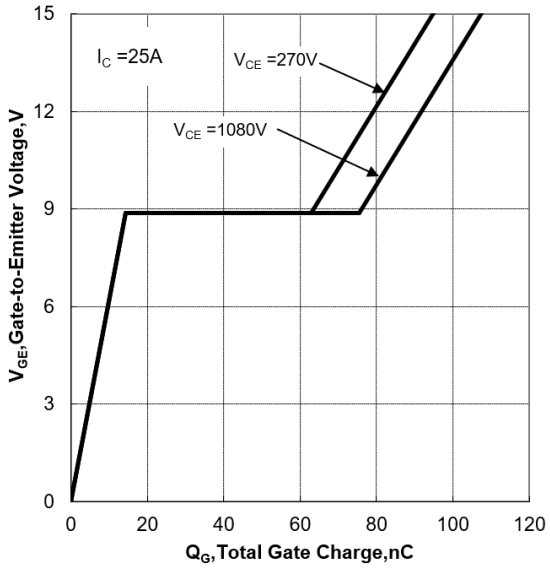


Figure 18 Typical Gate Charge

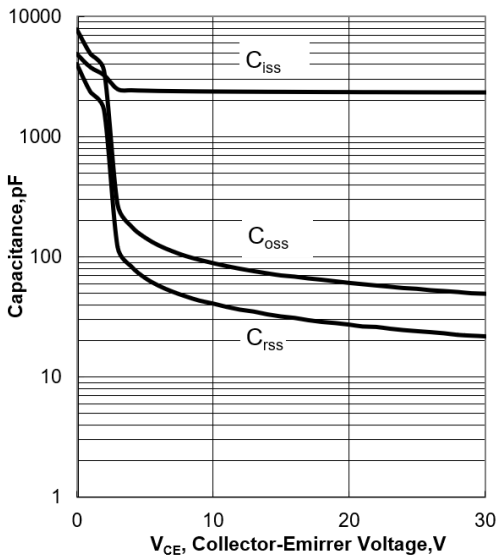


Figure 19 Typical Capacitance vs Collector-Emitter Voltage

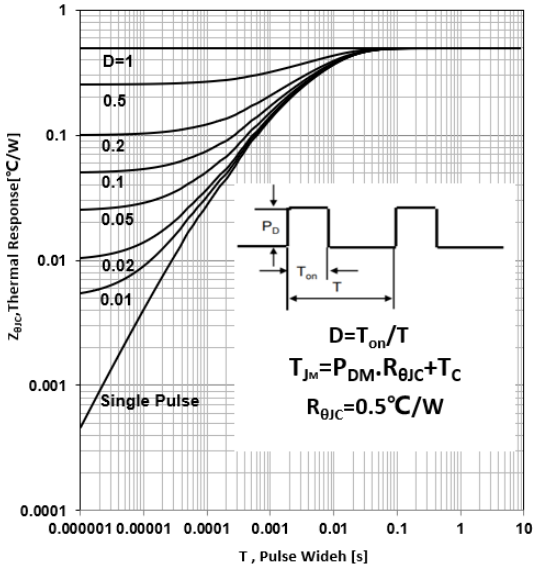


Figure 20 IGBT Transient Thermal Impedance vs Pulse Width

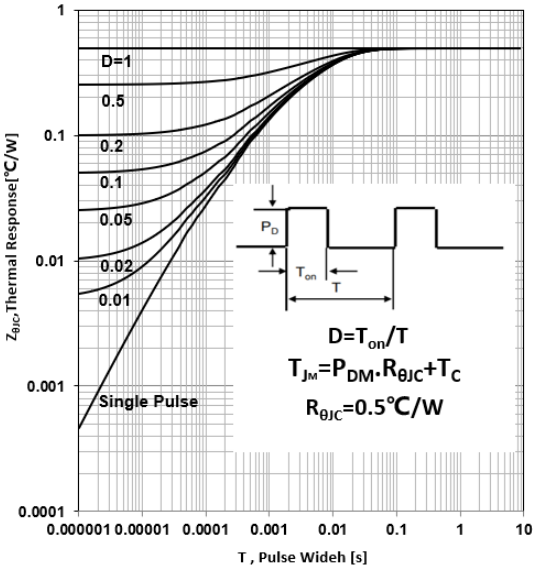


Figure 21 Diode Transient Thermal Impedance vs Pulse Width

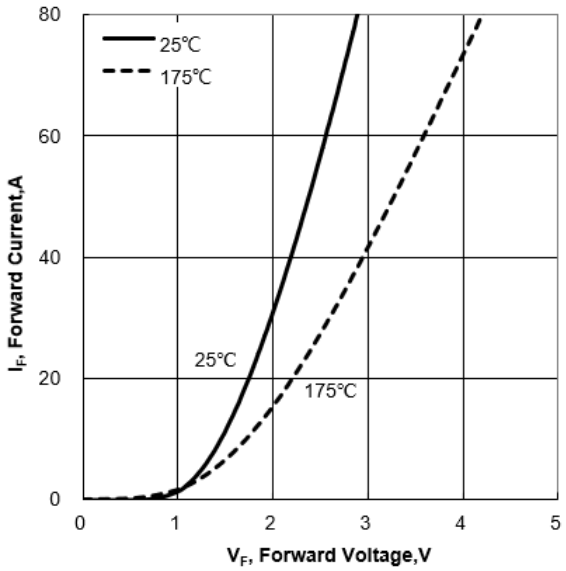


Figure 22 Typical Diode Forward Current vs Forward Voltage

7. Detailed Description

7.1 Test Circuit and Waveform

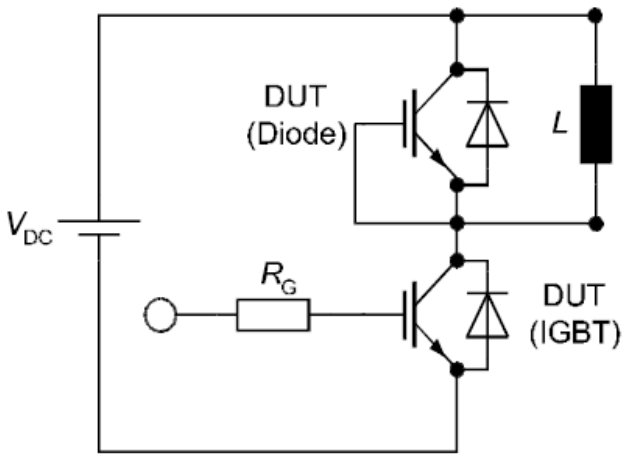


Figure 23 Inductive Switching Test Circuit

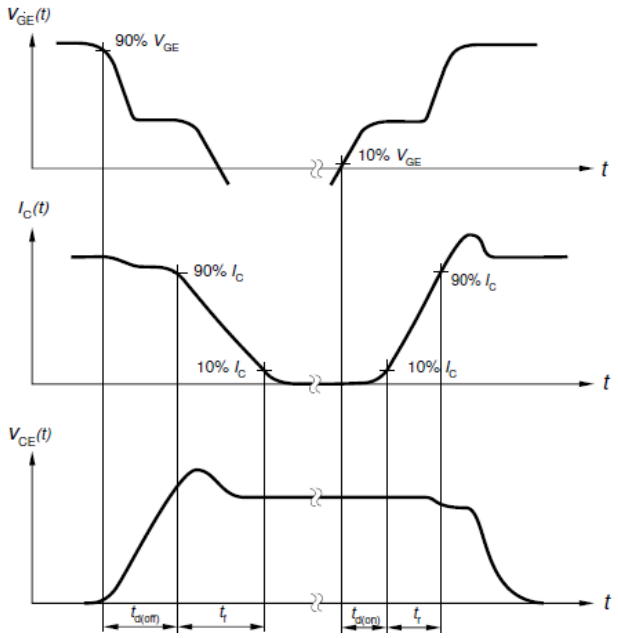


Figure 24 Definition of switching times

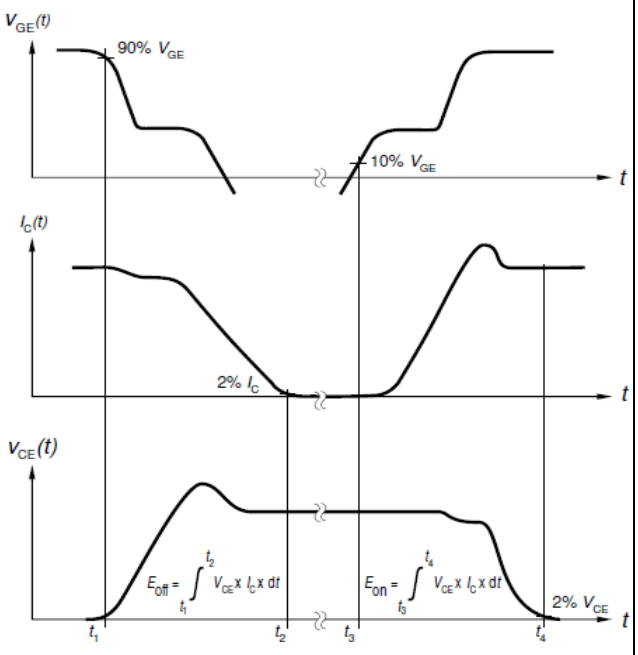


Figure 25 Definition of switching losses

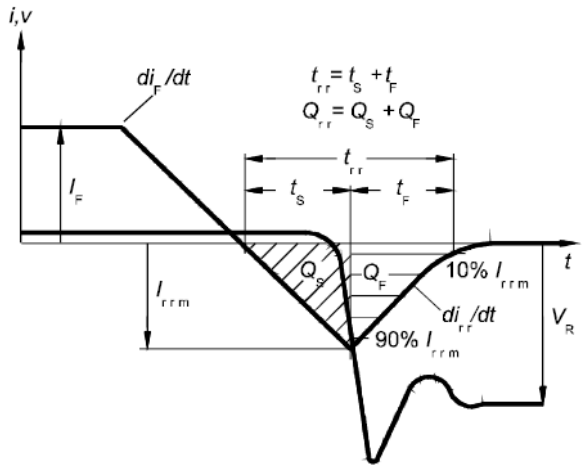
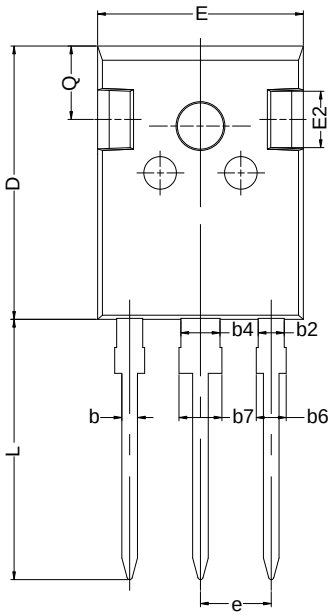


Figure 26 Definition of diode switching characteristics

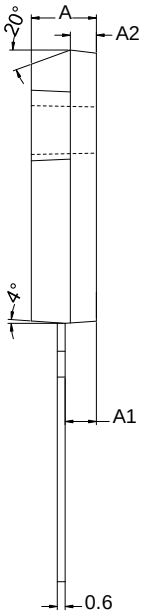
8. Package Information

8.1 Package Outline Dimensions

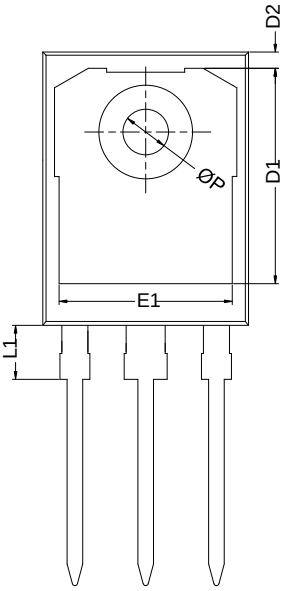
8.1.1 TO247



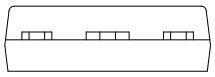
TOP VIEW



SIDE VIEW



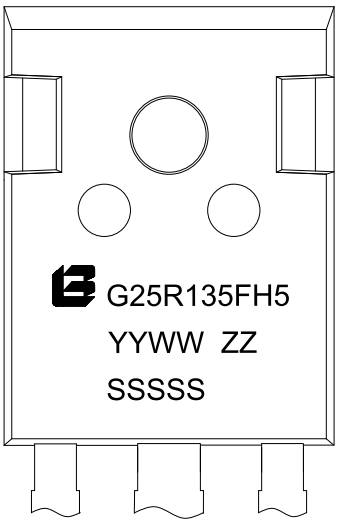
BOTTOM VIEW



SIDE VIEW

SYMBOL	ALL DIMENSION IN MILLIMETERS		
	MIN	MON	MAX
A	4.90	5.00	5.10
A1	2.30	2.40	2.50
A2	1.90	2.00	2.10
b	1.10	1.20	1.30
b2	---	2.00	2.20
b4	---	3.00	3.20
b6	---	2.20	2.35
b7	---	3.20	3.35
c	0.50	0.60	0.70
D	20.90	21.00	21.10
D1	16.55 REF.		
D2	1.20 REF.		
E	15.70	15.80	15.90
E1	13.30 REF.		
E2	4.23	---	5.10
L	19.80	20.00	20.20
L1	3.95	4.15	4.30
ØP	3.40	3.50	3.70
Q	5.54	---	6.00

8.2 Marking

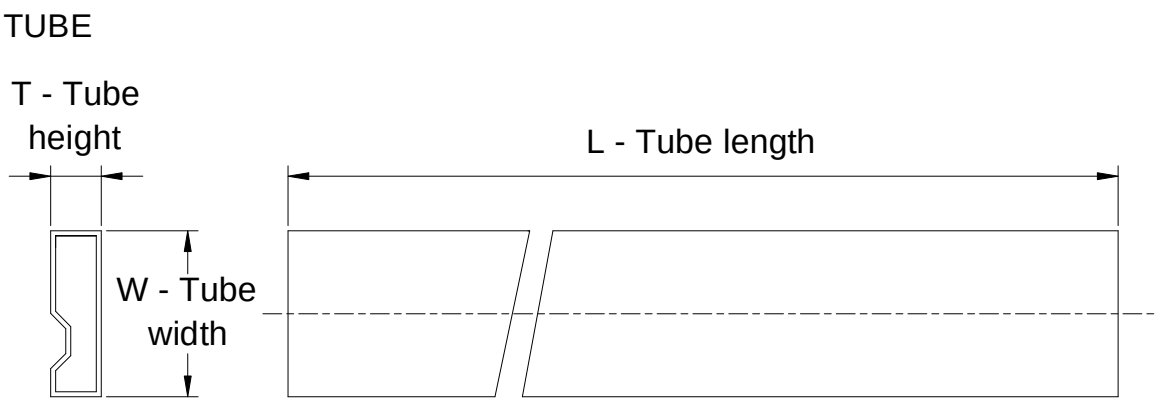


Marking Drawing

Content	Note
G25R135FH5	Device mark
YY	Calender year code
WW	Workweek date code
ZZ	Assembly factory code
SSSSS	Lot ID

9. Packing specifications

9.1 TO247 Tube Package



*All dimensions are nominal

Device	Package Type	Pins	SPQ	L (mm)	W (mm)	T (mm)
BLG25R135FH5-F	TO247	3	25	417	44.9	7.5

Revision History

Revision	Date	Subjects (major changes since last revision)
Version 01	2025-09	(1) Initial Version

Important Notice

a. Exceeding Maximum Ratings: Operation beyond the device's maximum rated performance may result in damage to the device, including permanent failure, which could affect system reliability. Do not exceed the absolute maximum ratings during circuit design. Belling shall not be liable for any personal injury, property damage, or other adverse consequences arising from user misuse, including but not limited to incorrect operation, negligence, or similar circumstances.

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Shanghai Belling Co., Ltd.

Address: No. 810 Yishan Road, Shanghai

Postal Code: 200233

Tel: 021-24261000

Company Website: https://www.belling.com.cn

Email: marketing@belling.com.cn
