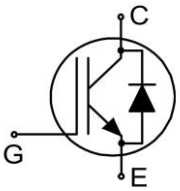
■ Description

The 025R135F47 is inverse conduction type insulated gate bipolar transistor adopts the new generation of inverse conduction type（Reverse Conducting）channel grid field cut-off process，which has the characteristics of low conduction loss and switching loss，high breakdown voltage，internal integrated continuous flow diode，positive temperature coefficient such as Inductive cooking，Inverterized microwave ovens，etc.



RoHS

■ Preliminary Data

V_{CES}	I_C	$V_{CE(sat)}$	V_F	Package
1350V	25A	1.97V	2.5V	TO-247

■ Features

- ✓ Advanced Trench Field stop Technology
- ✓ Ultra low $V_{CE（sat）}$ and switching loss
- ✓ High Energy Efficiency，Temperature Stability
- ✓ Easy Parallel Switching Capability due to Positive Temperature Coefficient in $V_{CE(sat)}$

■ Application

- ✓ Inductive cooking
- ✓ Inverterized microwave ovens

■ Absolute Maximum Ratings（T_C=25℃，unless otherwise specified.）

Parameter		Symbol	Rating	Unit
Collector-emitter Voltage		V_{CES}	1350	V
Transient Gate-emitter Voltage		V_{GES}	±20	V
Continuous Drain Current	T_C=25℃	I_C	50	A
	T_C=100℃		25	
Pulsed Collector Current，Limited by T_{jmax}		I_{CM}	75	A
Diode Continuous Collector Current	T_C=25℃	I_F	50	A
	T_C=100℃		25	
Diode Pulsed Current，Limited by T_{jmax}		I_{FM}	75	A
Power Dissipation	T_C=25℃	P_{tot}	206	W
	T_C=100℃		85	
Operating Junction Temperature Range		T_J	-40~150	℃
Storage Temperature Range		T_{stg}	-55~150	℃

■ Thermal Resistance

Parameter		Symbol	Min	Typ	Max	Unit
IGBT Thermal Resistance，Junction-to-Case	TO-247	R_{thJC}	-	-	0.55	ºC/W
Thermal Resistance，Junction-to-Ambient		R_{thJA}	-	-	40	

■ Electrical Characteristics（T_J=25℃，unless otherwise specified.）

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Statistic Characteristics						
Collector-emitter Breakdown Voltage	BV_{CES}	V_{GE}=0V，I_{CE}=1mA	1350	-	-	V
Gate Threshold Voltage	$V_{GE(th)}$	V_{CE}=V_{GE}，I_C=250uA	4.6	5.5	7.4	V
Collector-emitter saturation voltage	$V_{CE(sat)}$	V_{GE}=15V，I_C=25A	-	1.97	2.62	V
Zero Gate Voltage Collector Current	I_{CES}	V_{CE}=1350V，V_{GE}=0V	-	-	750	uA
Gate-emitter Leakage Current	I_{GESF}	V_{GE}=20V，V_{GE}=0V	-	-	250	nA
	I_{GESR}	V_{GE}=-20V，V_{GE}=0V	-	-	-250	
Dynamic Characteristics						
Input Capacitance	C_{ies}	V_{CE}=30V，V_{GE}=0V, f=1MHz	-	2210	-	pF
Output Capacitance	C_{oes}		-	52	-	
Reverse Transfer Capacitance	C_{res}		-	40	-	
Turn-on Delay Time	$t_{d(on)}$	V_{CE}=600V，I_C=25A，R_G=10Ω，V_{GE}=15V，T_J=25°C	-	31	-	ns
Rise Time	t_r		-	33	-	
Turn-off Delay Time	$t_{d(off)}$		-	191	-	
Fall Time	t_f		-	69	-	
Turn-on energy	E_{on}		-	1.76	-	mJ
Turn-off energy	E_{off}		-	0.92	-	
Gate Charge Characteristics						
Gate to Emitter Charge	Q_{ge}	V_{CC}=960V，I_C=25A，V_{GE}=0~15V	-	20	-	nC
Gate to Collector Charge	Q_{gc}		-	71	-	
Gate Charge Total	Q_g		-	138	-	
Reverse Diode Characteristics						
Diode forward voltage	V_F	V_{GE}=0V，I_F=25A	-	2.5	3.3	V

■ Typical Electrical Characteristics

Figure 1 Output Characteristics

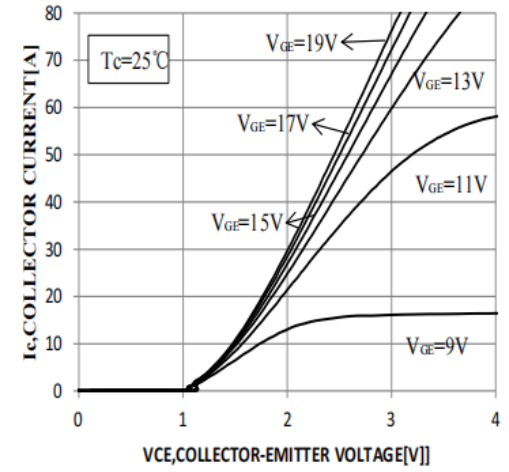


Figure 2 Output Characteristics

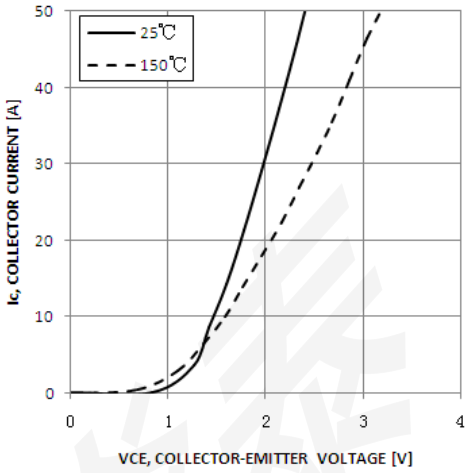


Figure 3 Gate Charge Wave Form

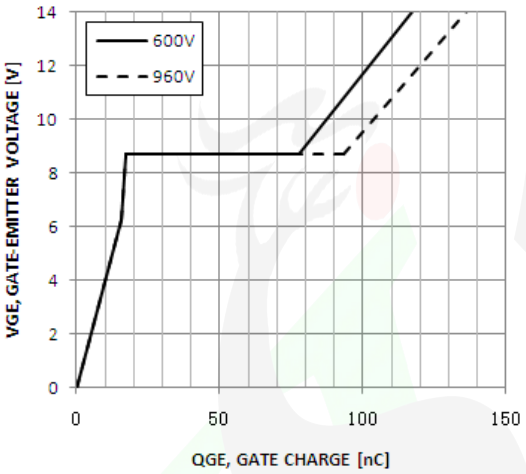


Figure 4 Capacitance Characteristics

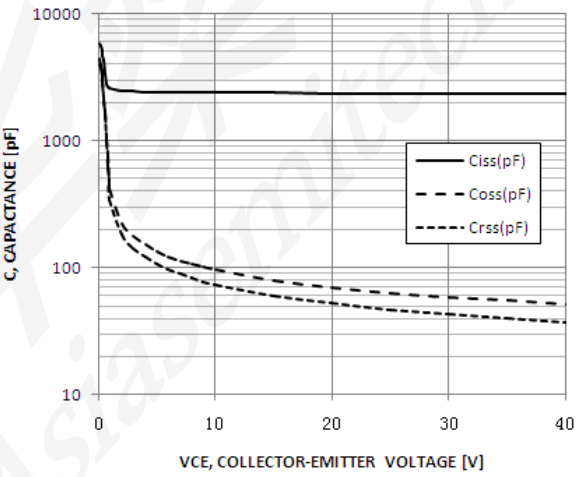


Figure 5 Switching Loss vs. R_G

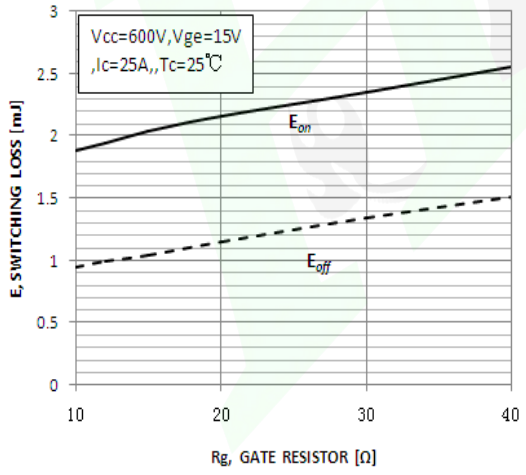


Figure 6 Switching Loss vs. Collector Current

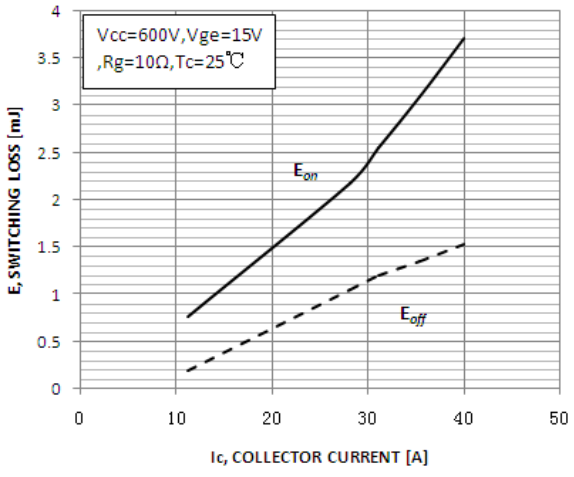


Figure 7 Forward Characteristics

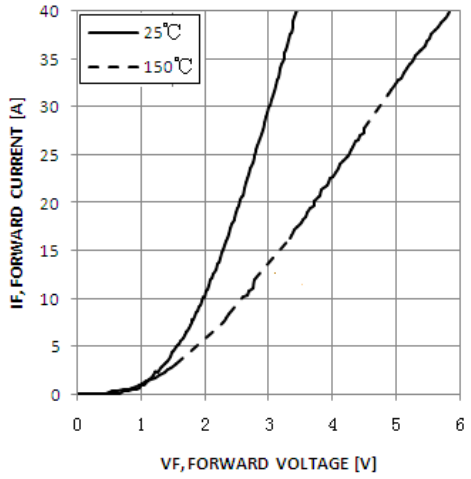


Figure 8 Collector Current vs. Case Temperature

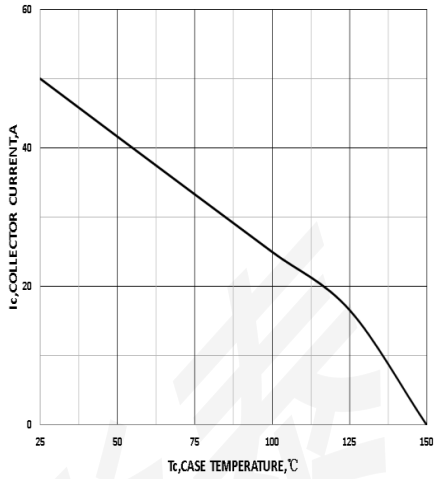


Figure 9 P_{tot} vs. Case Temperature

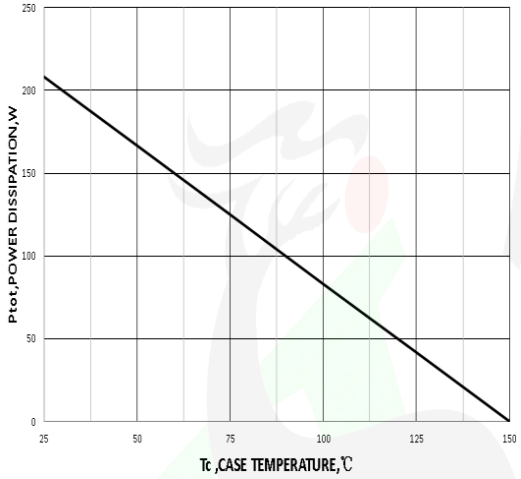


Figure 10 Forward Bias Safe Operating Area

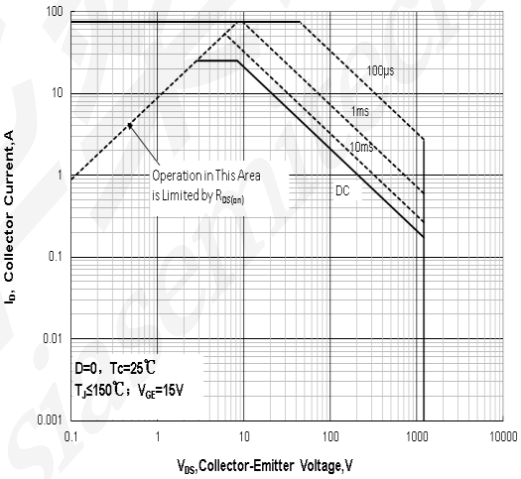


Figure 11 Transient thermal impedance IGBT

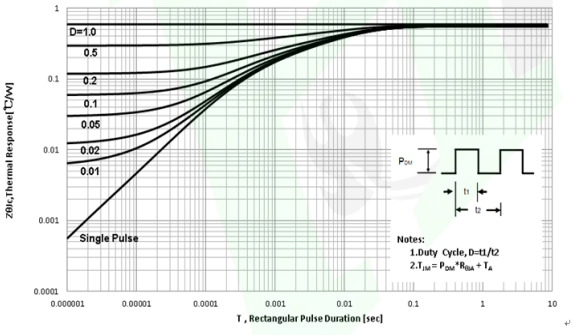
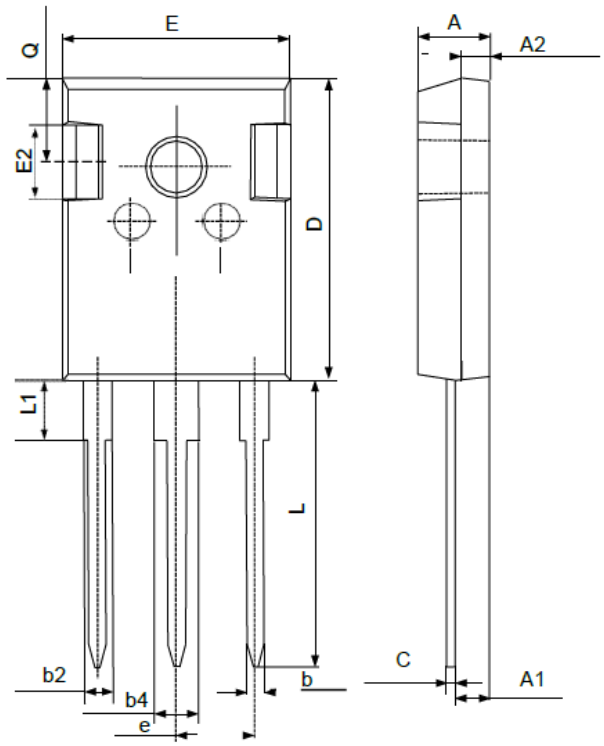


Figure 18. **IGBT Transient Thermal Impedance**

■ Package outlines



SYMBOL	MIN	NOM	MAX
A	4.80	5.00	5.20
A1	2.21	2.41	2.59
A2	1.85	2.00	2.15
b	1.11	---	1.36
b2	1.91	---	2.25
b4	2.91	---	3.25
c	0.51	---	0.75
D	20.80	21.00	21.30
E	15.50	15.80	16.10
E2	4.40	5.00	5.20
e		5.44 BSC	
L	19.72	19.92	20.22
L1	---	---	4.30
Q	5.60	5.80	6.00

Disclaimer

The product manual contains basic data and scope of application. The technician must evaluate the product data and use the product correctly.

All information in the specification is true and reliable. If you have any out-of-specification requirements for product data or have any questions about our products, please contact the sales office responsible for you.

Our products are prohibited from being used in illegal and criminal activities that endanger health and national interests.