



ATT075N065EQ

主要参数 MAIN CHARACTERISTICS

I _c	75A
V _{CEs}	650V
V _{cesat-typ}	1.7V

用途

- 工业逆变器
- 车载充电机
- DC-DC 变换器
- 马达驱动

产品特性

- 低栅极电荷
- Trench FS 技术
- RoHS 产品

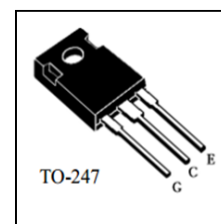
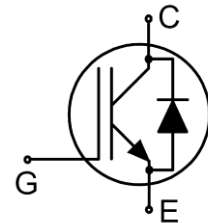
APPLICATIONS

- Industrial Inverter
- On Board Chargers
- DC-DC Converters
- Motordrives

FEATURES

- Low gate charge
- Trench FS Technology
- RoHS product

封装 Package



订货信息 ORDER MESSAGE

订货型号 Order codes				印 记 Marking	封 装 Package
有卤-条管 Halogen-Tube	无卤-条管 Halogen-Free-Tube	有卤-编带 Halogen-Reel	无卤-编带 Halogen-Free-Reel		
ATT075N065EQ-GE-B	ATT075N065EQ-GE-BR	N/A	N/A	ATT075N065EQ	TO-247

绝对最大额定值 ABSOLUTE RATINGS (T_C=25℃)

项 目 Parameter	符 号 Symbol	数 值 Value	单 位 Unit
最高集电极—发射极直流电压 Collector-Emmitter Voltage	V _{CES}	650	V
*连续集电极电流 Collector Current-continuous	I _C	150(T _C =25℃)	A
		75(T _C =100℃)	A
最大脉冲集电极极电流 (注 1) Collector Current – pulse (note 1)	I _{CM}	300	A
二极管正向测试电流 Diode RMS forward current	I _F	150(T _C =25℃)	A
		75 (T _C =100℃)	A
二极管正向不重复峰值电流 (浪涌电流) Surge non repetitive forward current tp= 10 ms sinusoidal	I _{FSM}	300	A
最高栅极发射极电压 Gate-Emmitter Voltage	V _{GES}	±20	V
瞬态栅极发射极电压 Transient Gate-emitter voltage(t _p ≤10us, D< 0.010)	V _{GES}	±30	V
安全工作区 Turn-off safe area	-	300	A
耗散功率 Power Dissipation	P _D T _C =25℃	625	W
工作结温 Operating Junction Temperature Range	T _{VJ}	-40~+175	℃
存储温度 Storage Temperature	T _{STG}	-55~+150	℃
引线最高焊接温度 Maximum Lead Temperature for Soldering Purposes	T _L	300	℃

*连续集电极电流由最高结温限制

*Collector current limited by maximum junction temperature

注释:

1: 脉冲宽度由最高结温限制

Notes:

1: Pulse width limited by maximum junction temperature





电特性 ELECTRICAL CHARACTERISTICS

项 目 Parameter	符 号 Symbol	测试条件 Tests conditions	最小 Min	典型 Typ	最大 Max	单位 Units
关态特性 Off –Characteristics						
集电极—发射极击穿电压 Collector-Emmitter Voltage	BV_{CES}	$I_C=250\mu A, V_{GE}=0V$	650	-	-	V
零栅压下集电极漏电流 Zero Gate Voltage Collector Current	I_{CES}	$V_{CE}=650V, V_{GE}=0V, T_C=25^\circ C$	-	-	80	μA
正向栅极体漏电流 Gate-body leakage current, forward	I_{GESF}	$V_{CE}=0V, V_{GE}=20V$	-	-	200	nA
反向栅极体漏电流 Gate-body leakage current, reverse	I_{GESR}	$V_{CE}=0V, V_{GE}=-20V$	-	-	-200	nA
通态特性 On-Characteristics						
阈值电压 Gate Threshold Voltage	$V_{GE(th)}$	$V_{CE} = V_{GE}, I_C=250\mu A$	4.5	-	6.5	V
饱和压降 Collector-Emmitter saturation Voltage	V_{CESAT}	$V_{GE}=15V, I_C=75A, T_C=25^\circ C$	-	1.7	2.4	V
动态特性 Dynamic Characteristics						
输入电容 Input capacitance	C_{ies}	$V_{CE}=25V, V_{GE}=0V, f=1.0MHz$	-	5012	-	pF
输出电容 Output capacitance	C_{oes}		-	430	-	pF
反向传输电容 Reverse transfer capacitance	C_{res}		-	99.6	-	pF
栅极电荷总量 Total Gate Charge	Q_g	$V_{CC}=520V, I_C=75A, R_G=7.9\Omega, V_{GE}=15V, T_C=25^\circ C$	-	170	-	nC
栅极-反射极 Gate to emitter charge	Q_{ge}		-	43	-	
栅极-集电极 Gate to collector charge	Q_{gc}		-	78	-	





电特性 ELECTRICAL CHARACTERISTICS

开关特性 Switching Characteristics

项 目 Parameter	符 号 Symbol	测试条件 Tests conditions	最小 Min	典型 Typ	最大 Max	单位 Units
开启延迟时间 Turn-On delay time	$t_{d(on)}$	$V_{CC}=400V, I_c=75A, R_G=7.9\Omega$ $V_{GE}=15V$ $T_C=25^\circ C$	-	87	-	ns
上升时间 Turn-On rise time	t_r		-	156	-	ns
关断延迟时间 Turn-Off delay time	$t_{d(off)}$		-	168	-	ns
下降时间 Turn-Off Fall time	t_f		-	86	-	ns
开通损耗 Turn-On energy	Eon		-	3.4	-	mJ
关断损耗 Turn-off energy	Eoff		-	1.8	-	mJ
总开关损耗 Total switching energy	Etot		-	5.2	-	mJ
开启延迟时间 Turn-On delay time	$t_{d(on)}$	$V_{CC}=400V, I_c=75A, R_G=7.9\Omega$ $V_{GE}=15V$ $T_C=150^\circ C$	-	85	-	ns
上升时间 Turn-On rise time	t_r		-	154	-	ns
关断延迟时间 Turn-Off delay time	$t_{d(off)}$		-	190	-	ns
下降时间 Turn-Off Fall time	t_f		-	99	-	ns
开通损耗 Turn-On energy	Eon		-	4.2	-	mJ
关断损耗 Turn-off energy	Eoff		-	2.2	-	mJ
总开关损耗 Total switching energy	Etot		-	6.4	-	mJ

反并联二极管特性及最大额定值 Anti-Parallel Diode Characteristics and Maximum Ratings

正向压降 Drain-Source Diode Forward Voltage	V_F	$I_F=75A$	-	2.0	2.5	V
反向恢复时间 Diode Reverse recovery time	t_{rr}	$V_{GE}=0V, V_R=200V I_F=75A$ $di_F/dt=200A/\mu s$ $T_C=25^\circ C$	-	24.5	-	ns
反向恢复电荷 Diode Reverse recovery charge	Qrr		-	20.6	-	nC
反向恢复电流 Diode Reverse recovery Current	I_{RRM}		-	1.64	-	A
反向恢复时间 Diode Reverse recovery time	t_{rr}		$V_{GE}=0V, V_R=200V I_F=75A$ $di_F/dt=200A/\mu s$ $T_C=150^\circ C$	-	195	-
反向恢复电荷 Diode Reverse recovery charge	Qrr	-		731	-	nC
反向恢复电流 Diode Reverse recovery Current	I_{RRM}	-		8.3	-	A

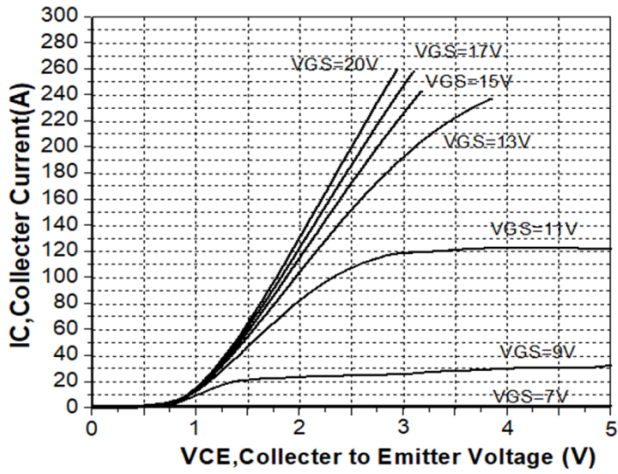
项 目 Parameter	符 号 Symbol	MAX	单 位 Unit
结到管壳的热阻 Junction to Case IGBT	$R_{th(j-c)}$	0.24	$^\circ C/W$
结到管壳的热阻 Junction to Case diode	$R_{th(j-c)}$	0.38	$^\circ C/W$
结到环境的热阻 Junction to Ambient	$R_{th(j-A)}$	40	$^\circ C/W$



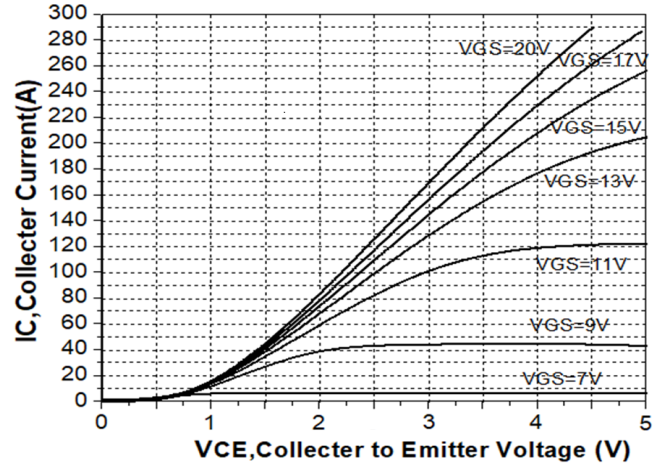


特征曲线 ELECTRICAL CHARACTERISTICS (curves)

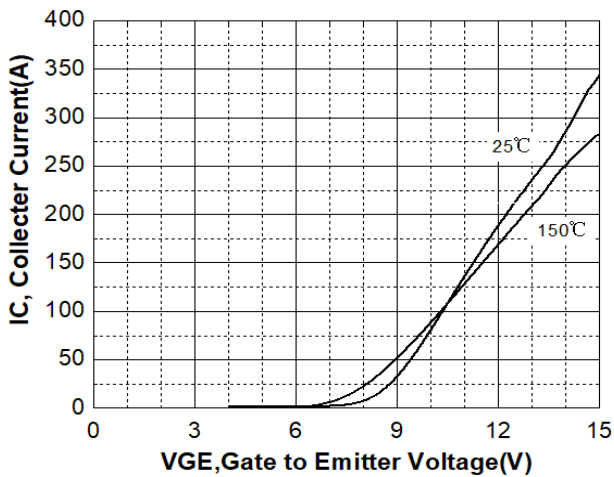
Output Characteristics (25°C)



Output Characteristics (150°C)

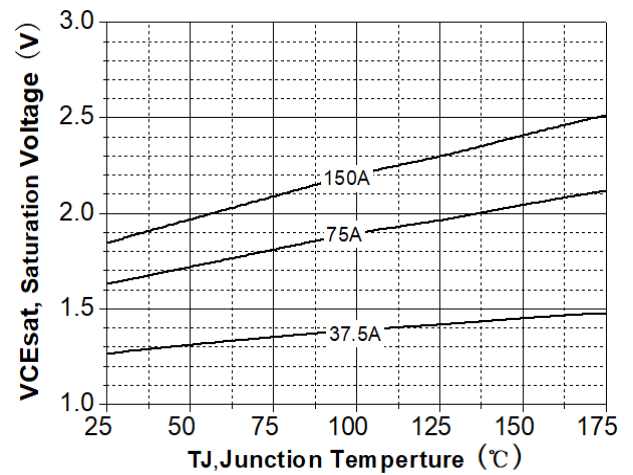


Transfer Characteristics



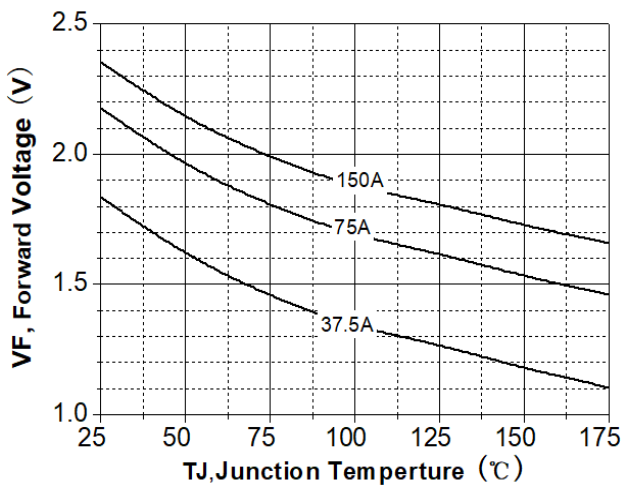
Vcesat vs. Tj

Vge=15V, Ic=37.5A, 75A, 150A



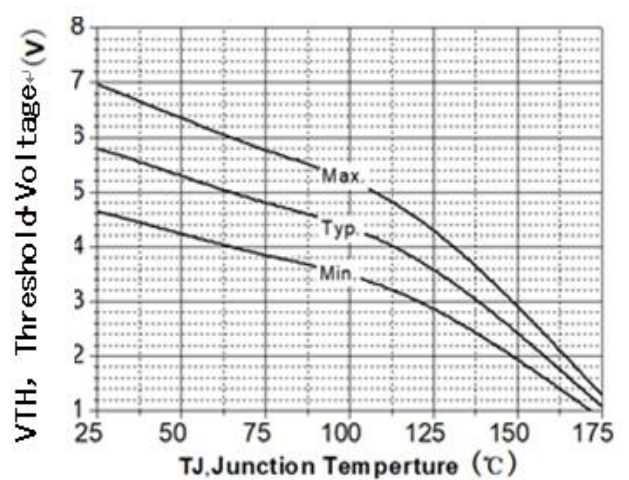
VF vs. Tj

Vge=15V, Ic=37.5A, 75A, 150A



VTH vs. Tj

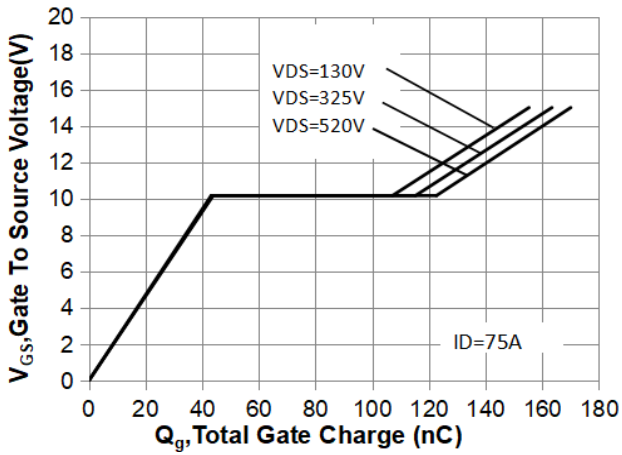
Ic=250uA





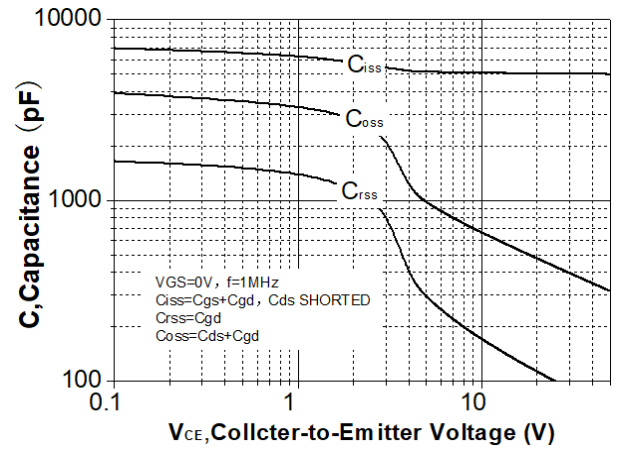
Gate Charge Characteristics

$V_{ge}=15V, I_c=75A$



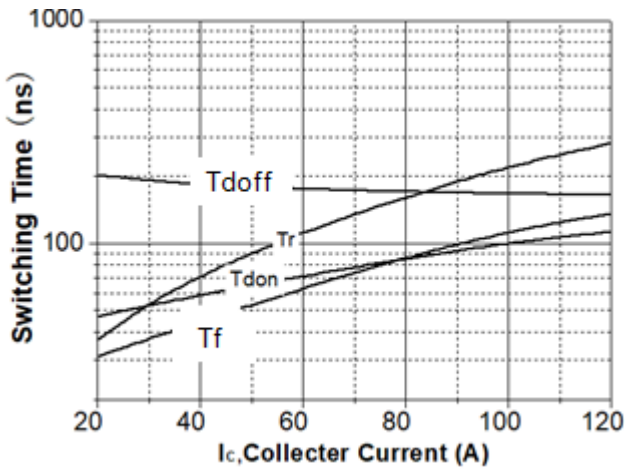
Capacitance Characteristic

$V_{ge}=0V, f=1.0MHz$



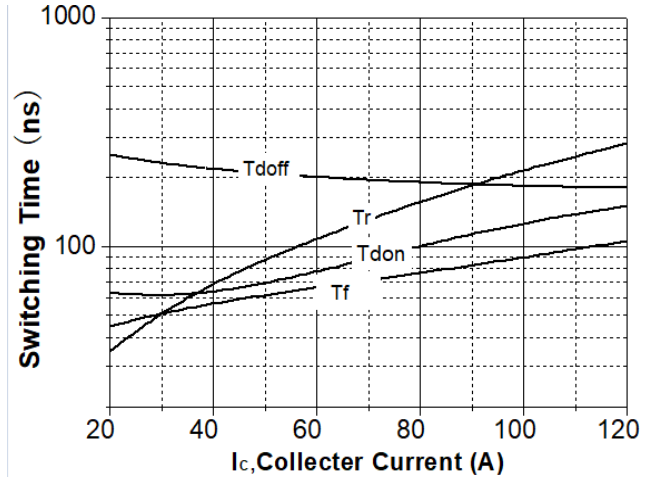
Switching Time vs. $I_C(25^\circ C)$

$V_{ce}=400V, V_{ge}=15V, R_g=7.9\Omega$



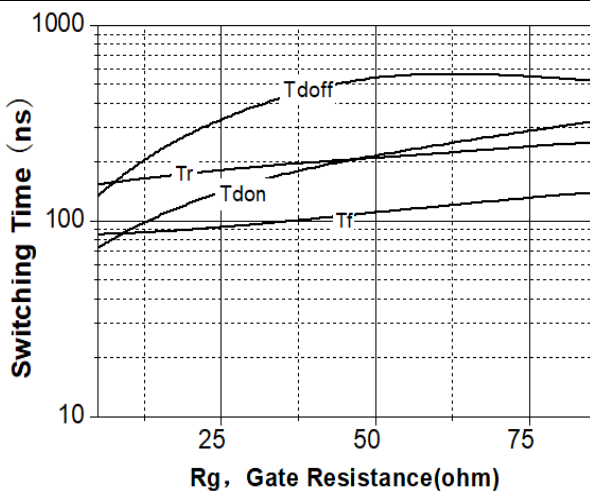
Switching Time vs. $I_C(150^\circ C)$

$V_{ce}=400V, V_{ge}=15V, R_g=7.9\Omega$



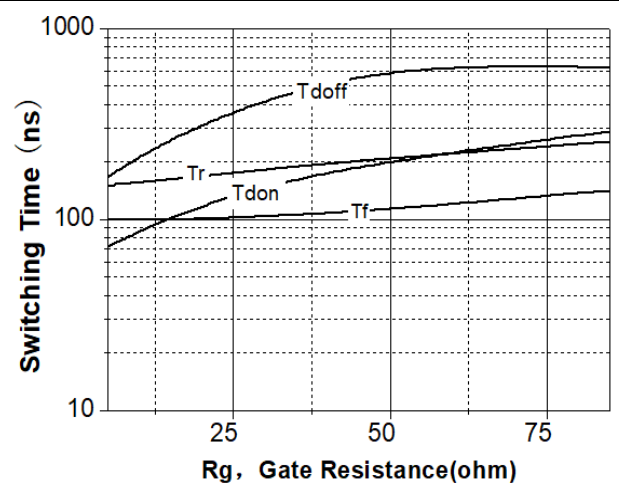
Switching Time vs. $R_g(25^\circ C)$

$V_{ge}=15V, V_{ce}=400V, I_c=75A$



Switching Time vs. $R_g(150^\circ C)$

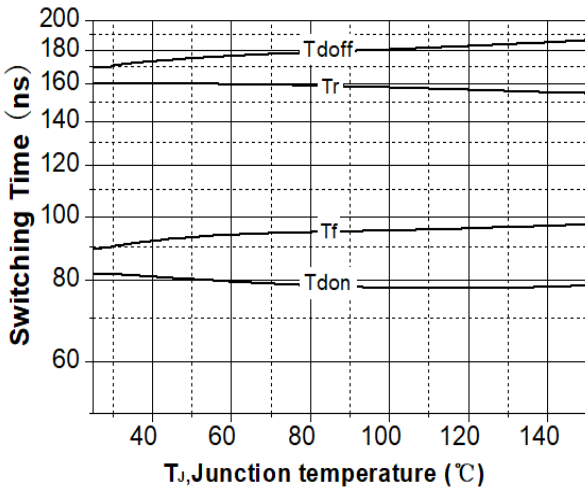
$V_{ge}=15V, V_{ce}=400V, I_c=75A$





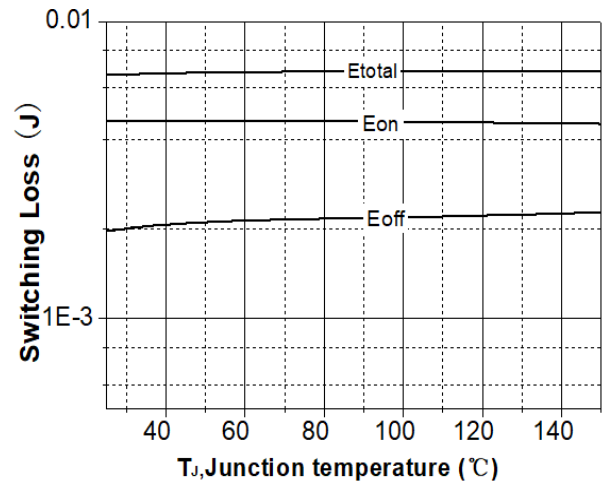
Switching Time vs. Tj

Vge=15V, Vce=400V, Ic=75A, Rg=7.9Ω



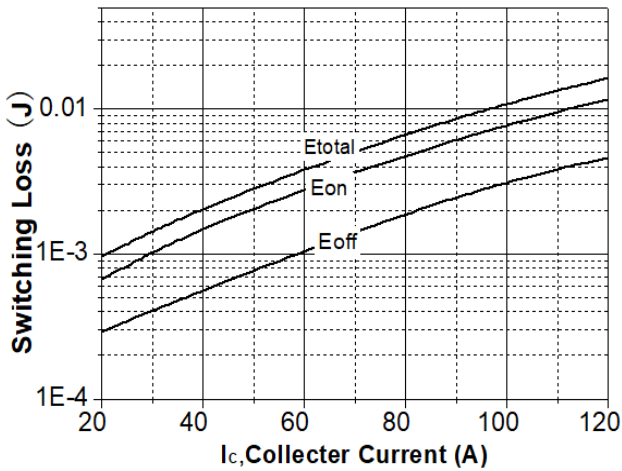
Switching Loss vs. Tj

Vge=15V, Vce=400V, Ic=75A, Rg=7.9Ω



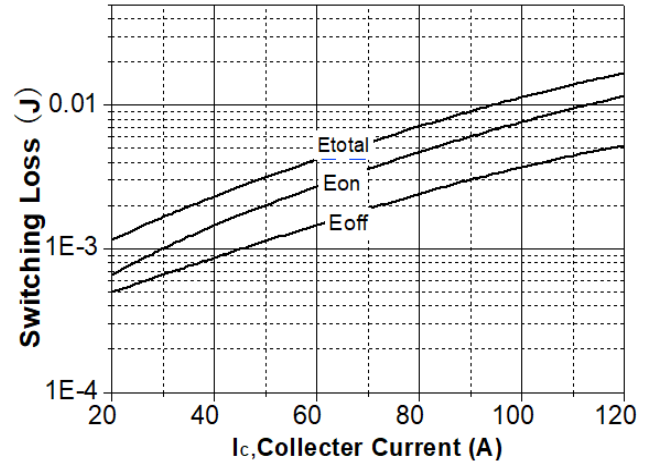
Switching Loss vs. IC(25°C)

Vge=15V, Vce=400V, Rg=7.9Ω



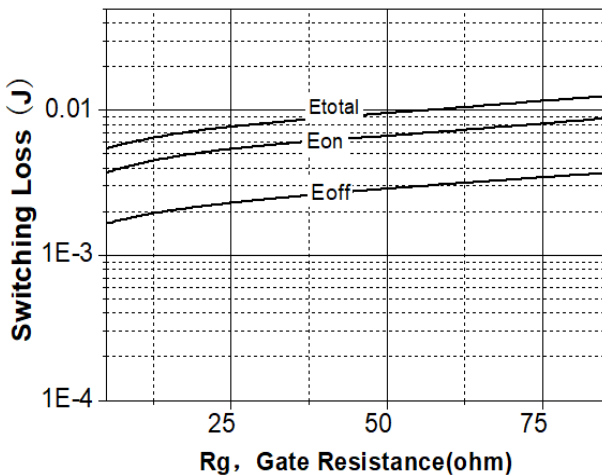
Switching Loss vs. IC(150°C)

Vge=15V, Vce=400V, Rg=7.9Ω



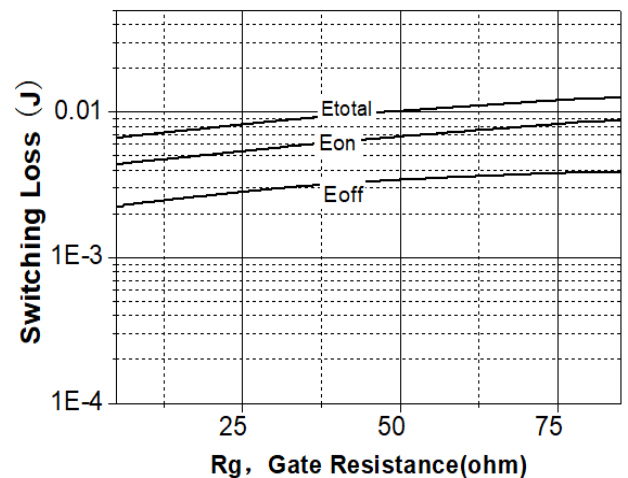
Switching Loss vs. Rg(25°C)

Vge=15V, Vce=400V, Ic=75A



Switching Loss vs. Rg(150°C)

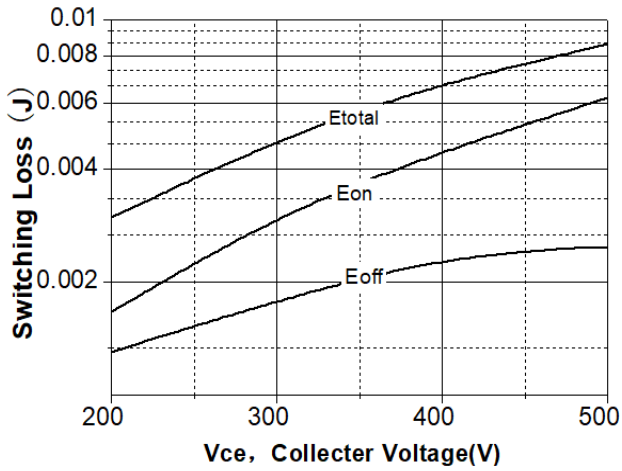
Vge=15V, Vce=400V, Ic=75A





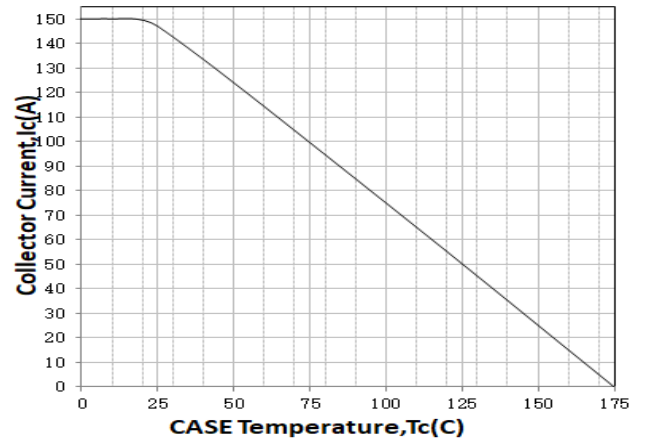
Switching Loss vs. VCE(150°C)

$V_{ge}=15V, I_c=75A, R_g=7.9\Omega$

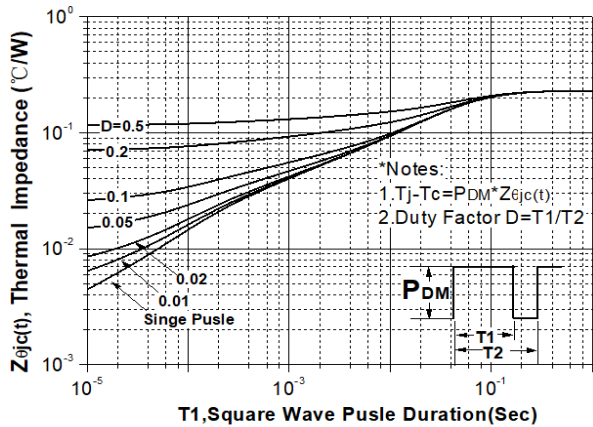


Collector current vs. case temperature

$V_{ge}\geq 15V, T_j\leq 175^\circ C$

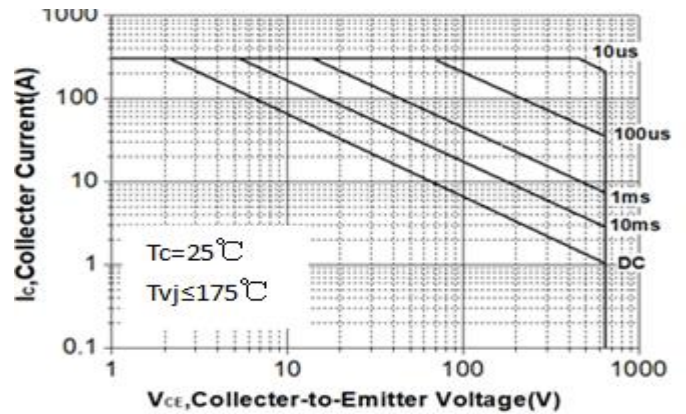


Transient Thermal Impedance for IGBT



Safe Operating Area For TO-247

$T_c=25^\circ C, V_{ge}=15V, T_j\leq 175^\circ C$

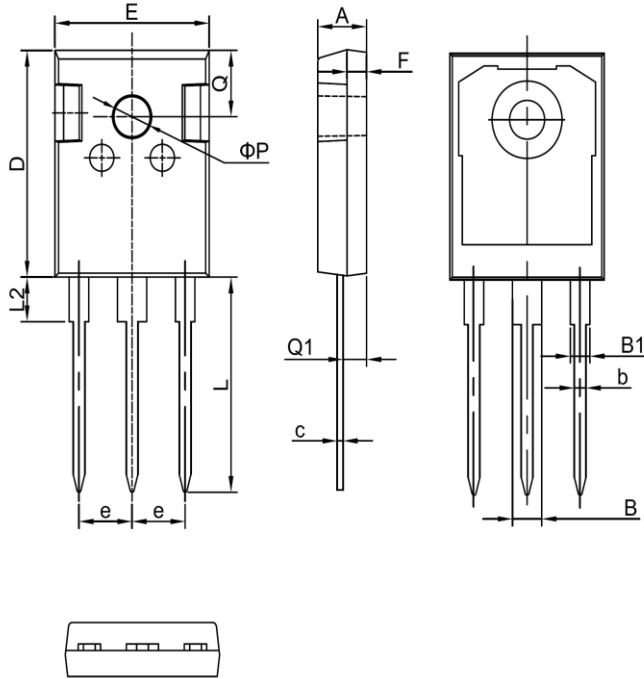




外形尺寸 PACKAGE MECHANICAL DATA

TO-247

单位 Unit: mm



符号 symbol	MIN	MAX
A	4.90	5.10
B	2.95	3.35
B1	1.95	2.35
b	1.15	1.35
c	0.50	0.70
D	20.90	21.10
E	15.70	15.90
e	5.34	5.54
F	1.90	2.10
L	19.40	20.40
L2	4.03	4.23
Q	6.00	6.40
Q1	2.30	2.50
P	3.50	3.70





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