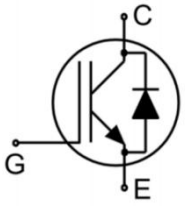
Main Product Characteristics:

V_{CES}	1250V
I_C	60A
$V_{CE(sat)}$	1.9V

TO-247



Schematic Diagram

Features and Benefits:

- Trench FS technology offering
- High speed switching
- Low gate charge and $V_{CE(sat)}$
- High ruggedness, temperature stable behavior
- Maximum junction temperature 175°C

Applications:

- Solar Inverters
- Uninterruptible power supplies
- Motor drives
- Air condition

Absolute Max Rating:

Symbol	Parameter	Value	Units
V_{CES}	Collector-Emitter Voltage	1250	V
V_{GES}	Gate- Emitter Voltage	±30	V
I_C	Collector Current	120	A
	Collector Current @T_C = 100 °C	60	
I_{Cpuls}	Pulsed Collector Current，t_p limited by Tjmax	180	
-	Turn off safe operating area，V_{CE}=1200V，T_J=175°C	180	
	Diode Continuous Forward Current @T_C = 100 °C	60	
I_{FM}	Diode Maximum Forward Current	200	
P_D	Power Dissipation @ T_C = 25°C	833	W
	Power Dissipation @ T_C = 100°C	417	W
T_J T_{STG}	Operating Junction and Storage Temperature Range	-55 to +175	°C
T_L	Maximum Temperature for Soldering	260	°C

Thermal Resistance

Symbol	Characterizes	Typ.	Max.	Units
$R_{\theta JC}$	Thermal Resistance,Junction-to-case for IGBT	—	0.18	°C/W
	Thermal Resistance,Junction-to-case for Diode	—	0.4	°C/W
$R_{\theta JA}$	Thermal Resistance,Junction-to-ambient	—	40	°C/W

Electrical Characteristics @T_A=25°C unless otherwise specified

Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
$V_{(BR)CES}$	Collector-Emitter Breakdown Voltage	1250	—	—	V	V_{GE}=0V,I_{CE}=1mA
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	—	1.9	2.3	V	I_C=60A ,V_{GE}=15V @T_J=25°C
		—	2.4	—		I_C=60A ,V_{GE}=15V @T_J=150°C
$V_{GE(th)}$	Gate Threshold Voltage	4.5	—	6.5	V	I_C=1mA,V_{CE}=V_{GE}
I_{CES}	Collector-Emitter Leakage Current	—	—	2	μA	V_{GE} =0V,V_{CE}=1200V
I_{GES}	Gate to Emitter Reverse Leakage	—	—	200	nA	V_{GE}=30V,V_{CE} =0V
		—	—	-200		V_{GE}=-30V,V_{CE} =0V
C_{ies}	Input capacitance	—	6100	—	pF	V_{GS} = 0V V_{DS} = 30V f = 800kHz
C_{oes}	Output capacitance	—	190	—		
C_{res}	Reverse transfer capacitance	—	58	—		
$t_{d(on)}$	Turn-on delay time	—	65	—	ns	V_{CC}=600V,I_C=40A, V_{GE}=0/15V, R_g=12Ω
t_r	Rise time	—	54	—		
$t_{d(off)}$	Turn-Off delay time	—	228	—		
t_f	Fall time	—	113	—		
E_{on}	Turn-On Switching Loss	—	2.9	—	mJ	V_{CC}=600V,I_C=40A, V_{GE}=0/15V, R_g=12Ω
E_{off}	Turn-Off Switching Loss	—	1.3	—		
E_{ts}	Total Switching Loss	—	4.2	—		
Q_g	Total Gate Charge	—	232	—	nC	V_{CC}=480V, I_C=40A, V_{GE}=15V
Q_{ge}	Gate to Emitter Charge	—	62	—		
Q_{gc}	Gate to Collector Charge	—	92	—		
$I_{C(SC)}$	Short circuit collector current Max.1000 short circuits Time between short circuits: ⩾1.0s	—	550	—	A	V_{GE}=15V,V_{CC}⩽600V, t_{sc}⩽6μs,T_J⩽150°C

Electrical Characteristics of the Diode@T_A=25°C unless otherwise specified

Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
V_{FM}	Diode Forward Voltage	—	2.4	3	V	I_F=60A
t_{rr}	Reverse Recovery Time	—	433	—	ns	T_J = 25°C, I_F =40A, di/dt = 500A/μs,Lσ=30nH
Q_{rr}	Reverse Recovery Charge	—	2.6	—	μC	
I_{RRM}	Diode Peak Reverse Recovery Current	—	15	—	A	

Typical Electrical and Thermal Characteristics

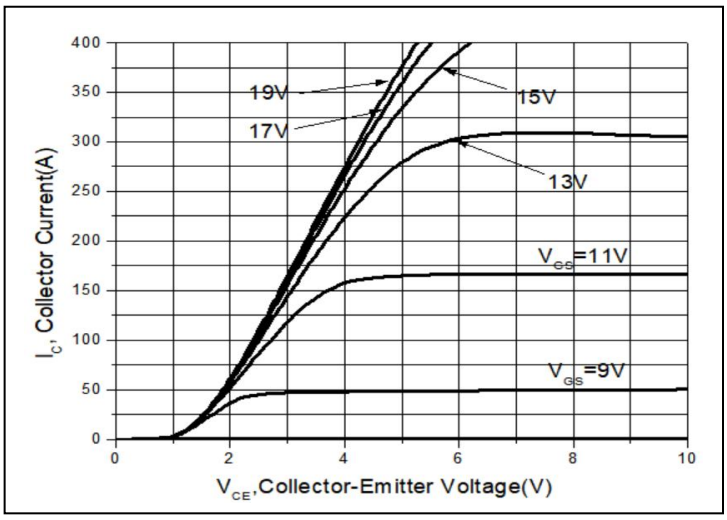


Figure1. Typical Output Characteristics

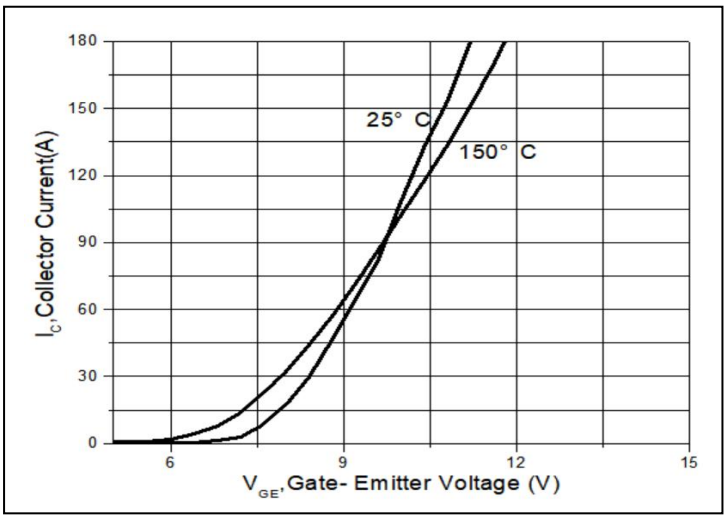


Figure2. Typical Transfer Characteristics

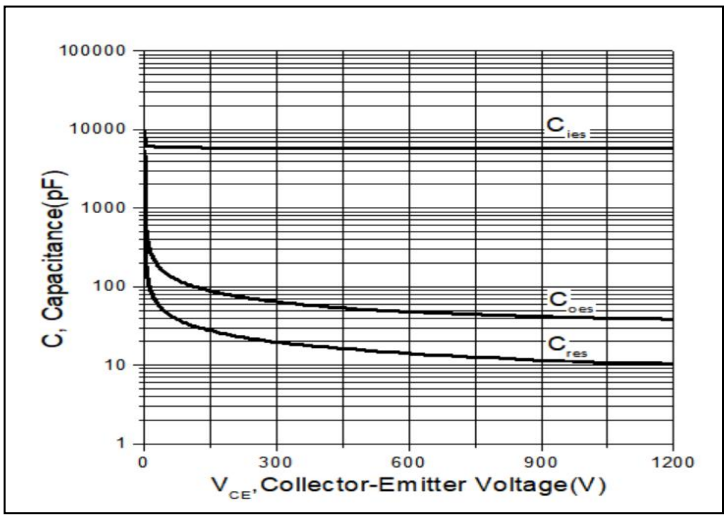


Figure3.Typical Capacitance

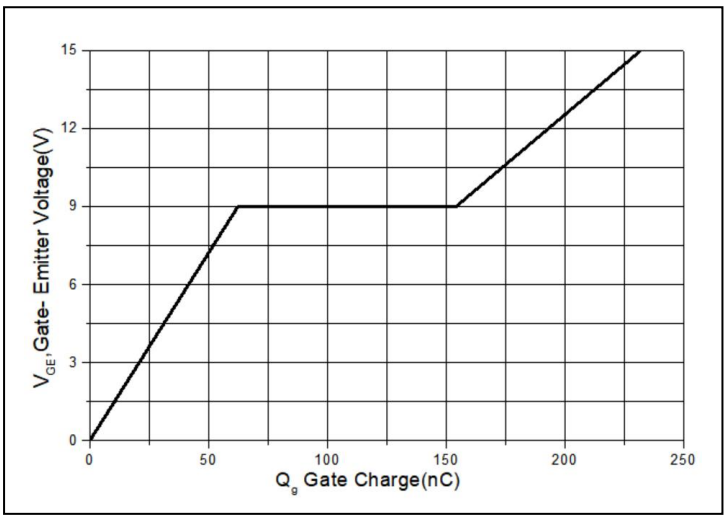


Figure4. Typical Gate Charge

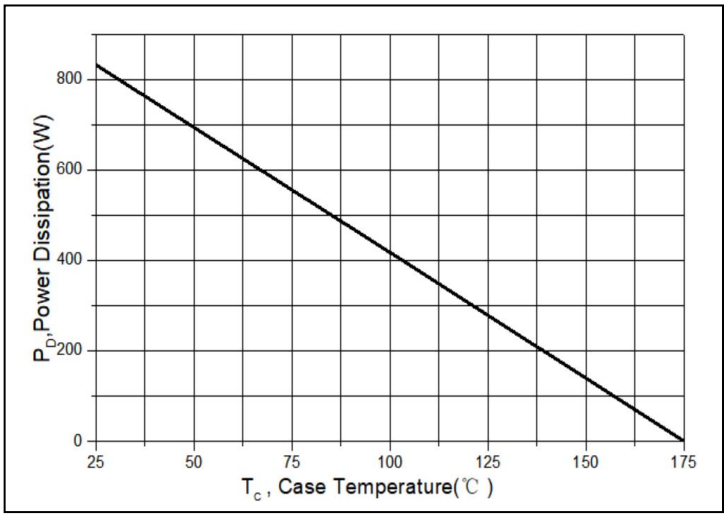


Figure5. Power Dissipation vs. Case Temperature

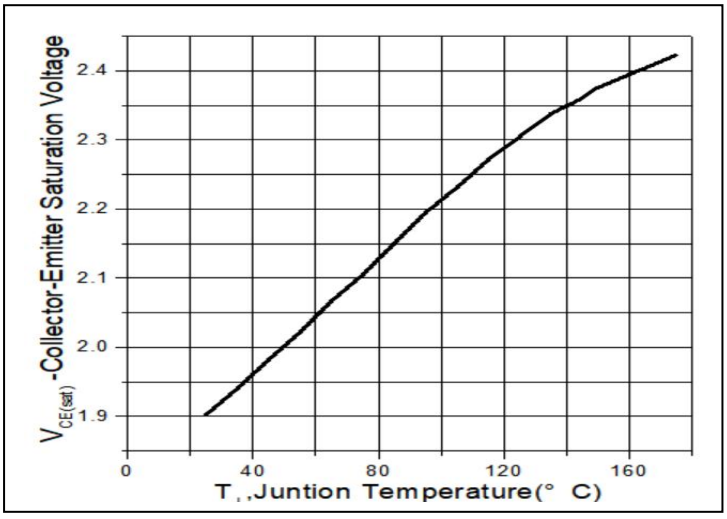


Figure6. Collector-Emitter Saturation Voltage vs. Temperature

Typical Electrical and Thermal Characteristics

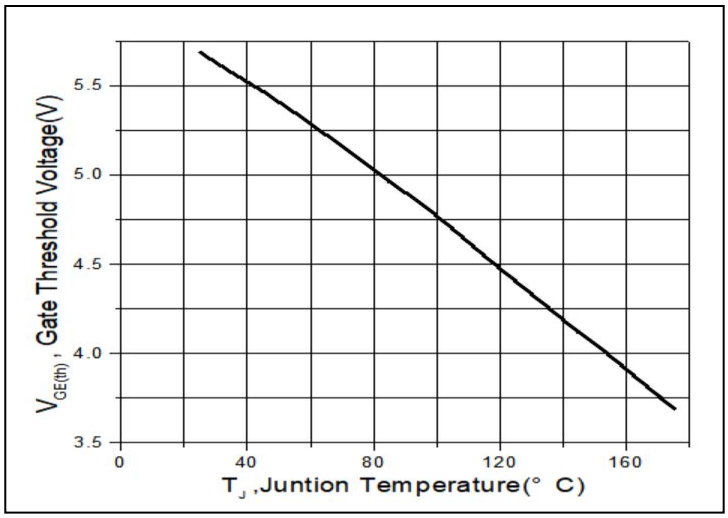


Figure7.Gate Threshold Voltage vs. Temperature

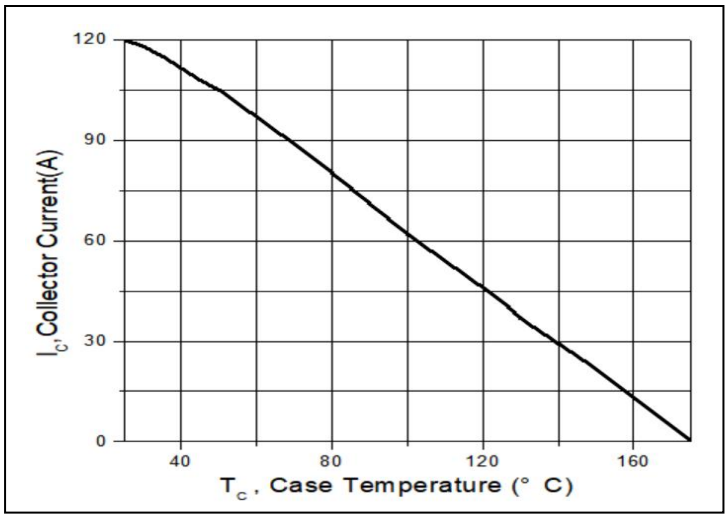
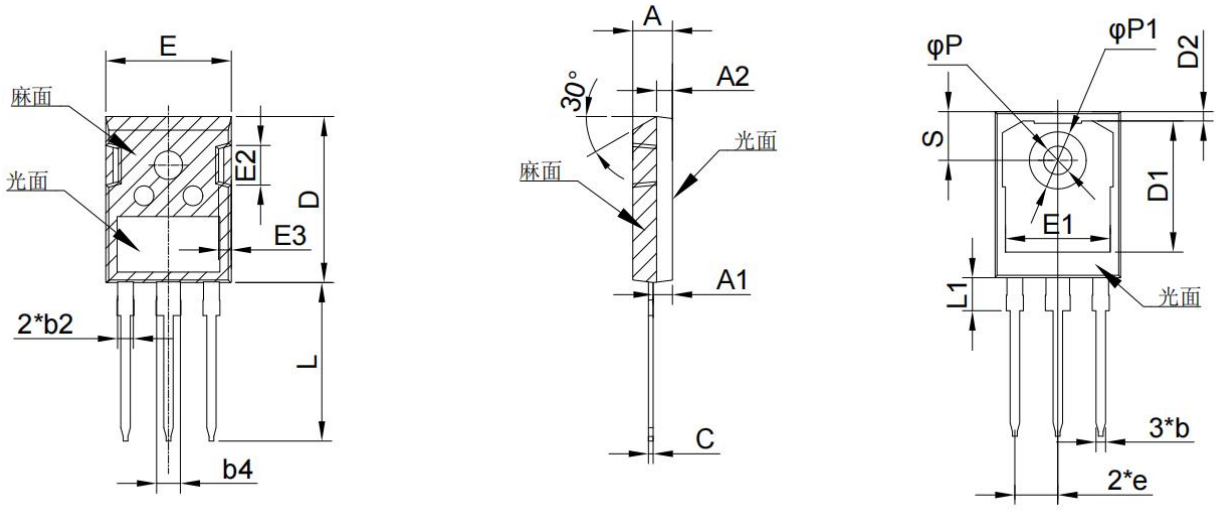


Figure8.Collector Current vs. Temperature

Mechanical Data：

Unit:mm



TO247-3L							
	Min	Typ	Max		Min	Typ	Max
A	4.7	5.00	5.20	E1	13.2	13.5	13.8
A1	2.30	2.40	2.50	E2	4.90	5.00	5.10
A2	1.90	2.00	2.10	E3	1.50	1.60	1.70
b	1.10	1.20	1.30	e	5.34	5.44	5.54
b2	1.80	2.00	2.20	L	19.80	20.00	20.32
b4	2.80	3.00	3.20	L1		4.17	4.50
C	0.5	0.6	0.7	P	3.50	3.60	3.70
D	20.8	20.95	21.1	P1	7.00	7.19	7.40
D1	16.25	16.55	16.85	S	6.04	6.15	6.3
D2	0.95	1.17	1.35				
E	15.48	15.88	16.28				

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