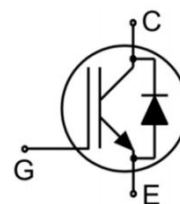


Main Product Characteristics:

V_{CES}	1250V
I_C	40A
$V_{CE(sat)}$	1.8V


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	80	A
	Collector Current @ $T_C = 100^\circ\text{C}$	40	
I_{Cpuls}	Pulsed Collector Current, t_p limited by T_{jmax}	160	
-	Turn off safe operating area, $V_{CE}=1200V$, $T_J=175^\circ\text{C}$	160	
I_F	Diode Continuous Forward Current @ $T_C = 100^\circ\text{C}$	40	
I_{FM}	Diode Maximum Forward Current	160	
P_D	Power Dissipation @ $T_C = 25^\circ\text{C}$	468	W
	Power Dissipation @ $T_C = 100^\circ\text{C}$	234	W
T_J T_{STG}	Operating Junction and Storage Temperature Range	-55 to +175	$^\circ\text{C}$
T_L	Maximum Temperature for Soldering	260	$^\circ\text{C}$

Thermal Resistance

Symbol	Characterizes	Typ.	Max.	Units
R _{θJC}	Thermal Resistance, Junction-to-case for IGBT	—	0.32	°C/W
	Thermal Resistance, Junction-to-case for Diode	—	0.61	°C/W
R _{θJA}	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	—	1.8	2	V	I _C =40A, V _{GE} =15V @T _J =25°C
		—	2.25	—		I _C =40A, V _{GE} =15V @T _J =175°C
V _{GE(th)}	Gate Threshold Voltage	4.5	—	6	V	I _C =1.9mA, V _{CE} =V _{GE}
I _{CES}	Collector-Emitter Leakage Current	—	—	200	μA	V _{GE} =0V, V _{CE} =1200V
I _{GES}	Gate to Emitter Reverse Leakage	—	—	200	nA	V _{GE} =25V, V _{CE} =0V
		—	—	-200		V _{GE} =-25V, V _{CE} =0V
C _{ies}	Input capacitance	—	4700	—	pF	V _{GS} = 0V
C _{oes}	Output capacitance	—	106	—		V _{DS} = 50V
C _{res}	Reverse transfer capacitance	—	66	—		f = 1MHz
t _{d(on)}	Turn-on delay time	—	40	—	ns	V _{CC} =600V, V _{GE} =0.0/15.0V, R _G =10.0Ω, L _σ =70nH, C _σ =67pF
t _r	Rise time	—	23	—		
t _{d(off)}	Turn-Off delay time	—	350	—		
t _f	Fall time	—	50	—		
E _{on}	Turn-On Switching Loss	—	2.2	—	mJ	V _{CC} =600V, V _{GE} =0.0/15.0V, R _G =10.0Ω, L _σ =70nH, C _σ =67pF
E _{off}	Turn-Off Switching Loss	—	1.8	—		
E _{ts}	Total Switching Loss	—	4	—		
Q _g	Total Gate Charge	—	238	—	nC	V _{CC} =480V, I _C =40A, V _{GE} =15V
Q _{ge}	Gate to Emitter Charge	—	40	—		
Q _{gc}	Gate to Collector Charge	—	135	—		

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

Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
V _{FM}	Diode Forward Voltage	—	2.3	3	V	I _F =40A, V _{GE} =0V
t _{rr}	Reverse Recovery Time	—	320	—	ns	T _J = 25°C, I _F = 40A, di/dt = 700A/μs
Q _{rr}	Reverse Recovery Charge	—	2.6	—	μC	
I _{RRM}	Diode Peak Reverse Recovery Current	—	19	—	A	

Typical Electrical and Thermal Characteristics

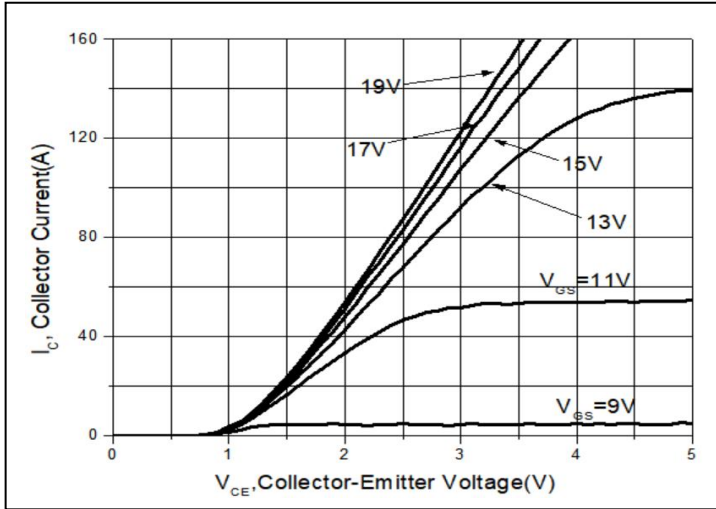


Figure1. Typical Output Characteristics

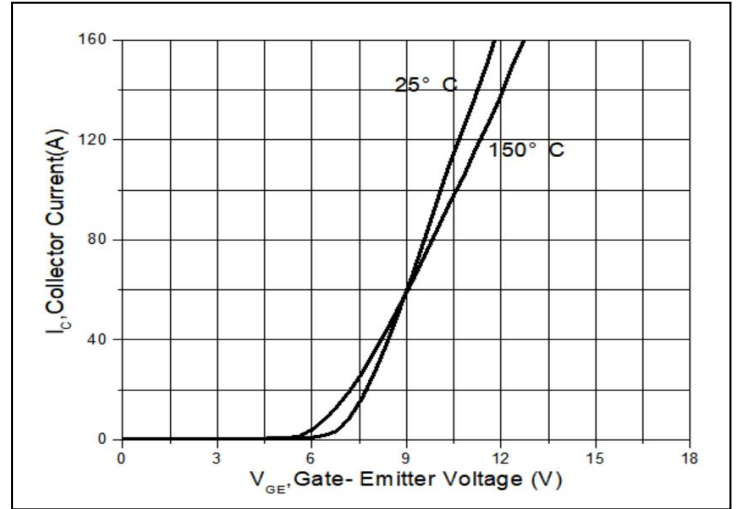


Figure2. Typical Transfer Characteristics

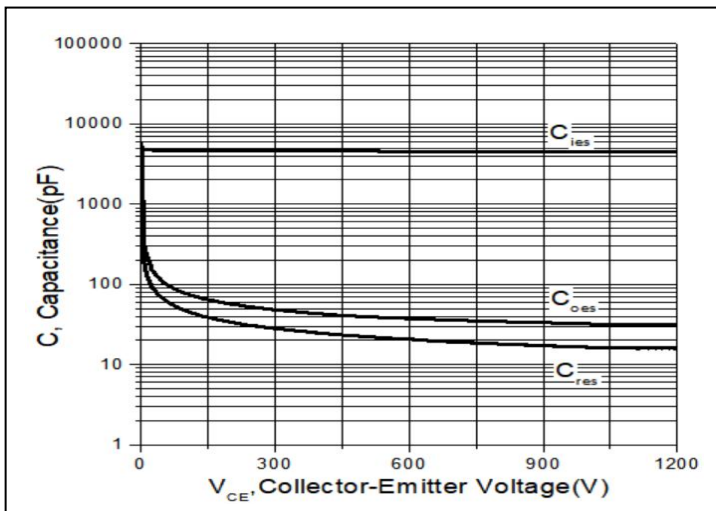


Figure3. Typical Capacitance

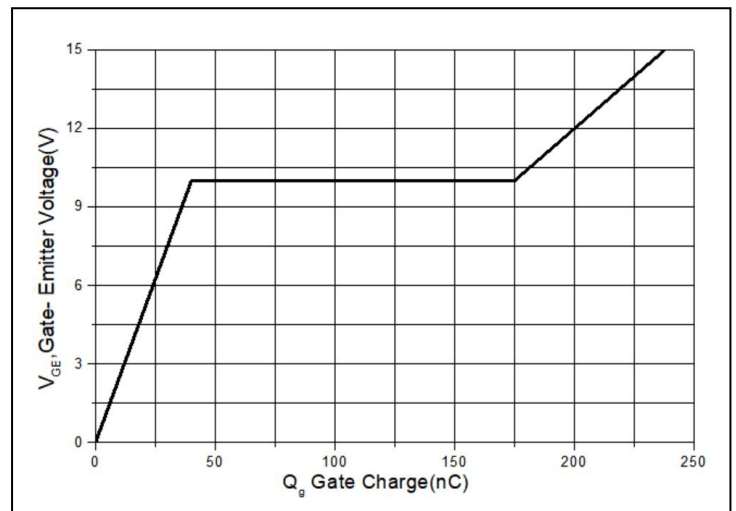


Figure4. Typical Gate Charge

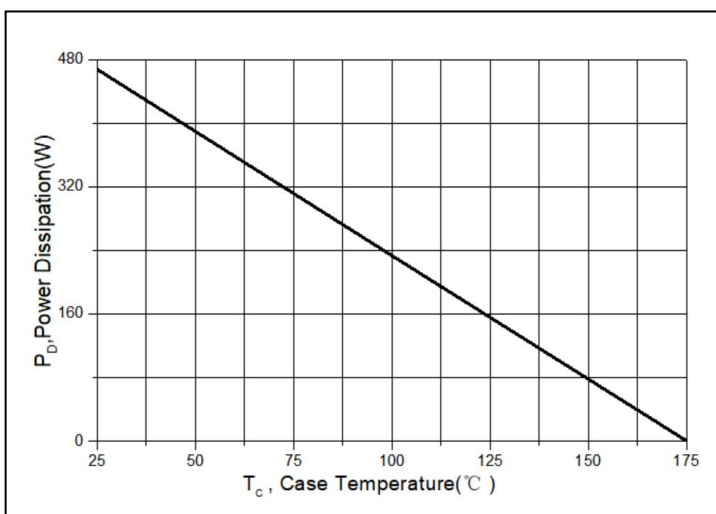


Figure5. Power Dissipation vs. Case Temperature

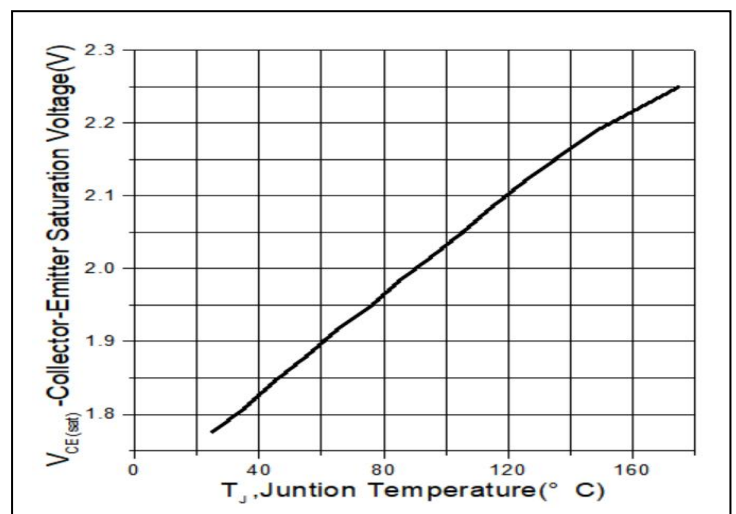


Figure6. Collector-Emmitter Saturation Voltage vs. Temperature

Typical Electrical and Thermal Characteristics

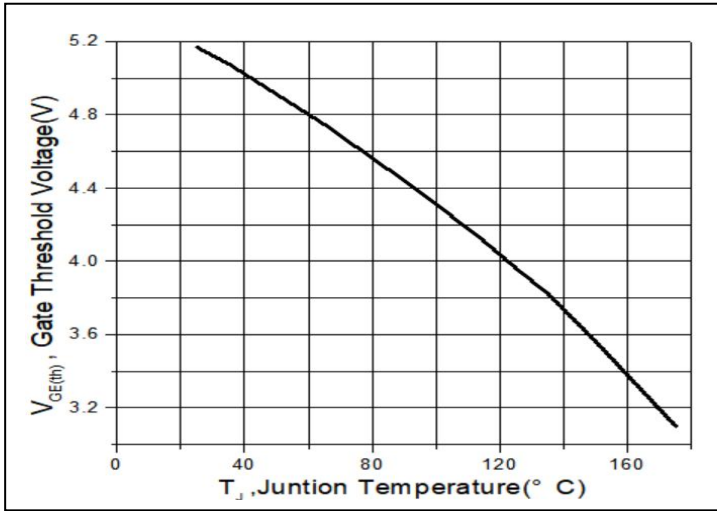


Figure7. Gate Threshold Voltage vs. Temperature

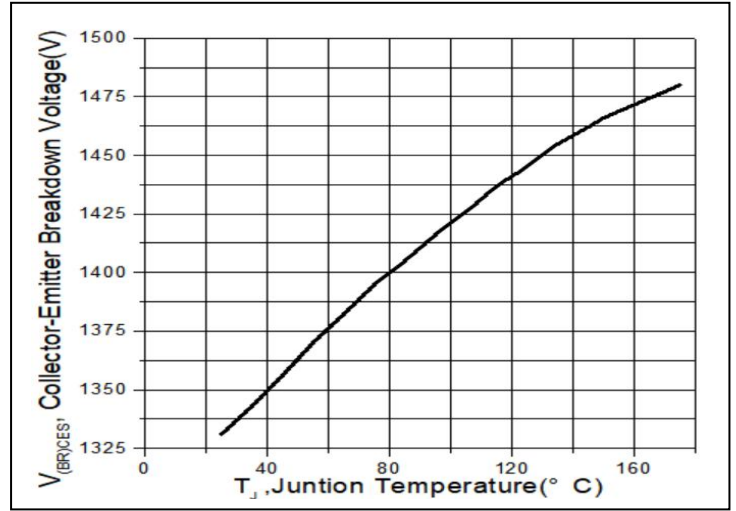
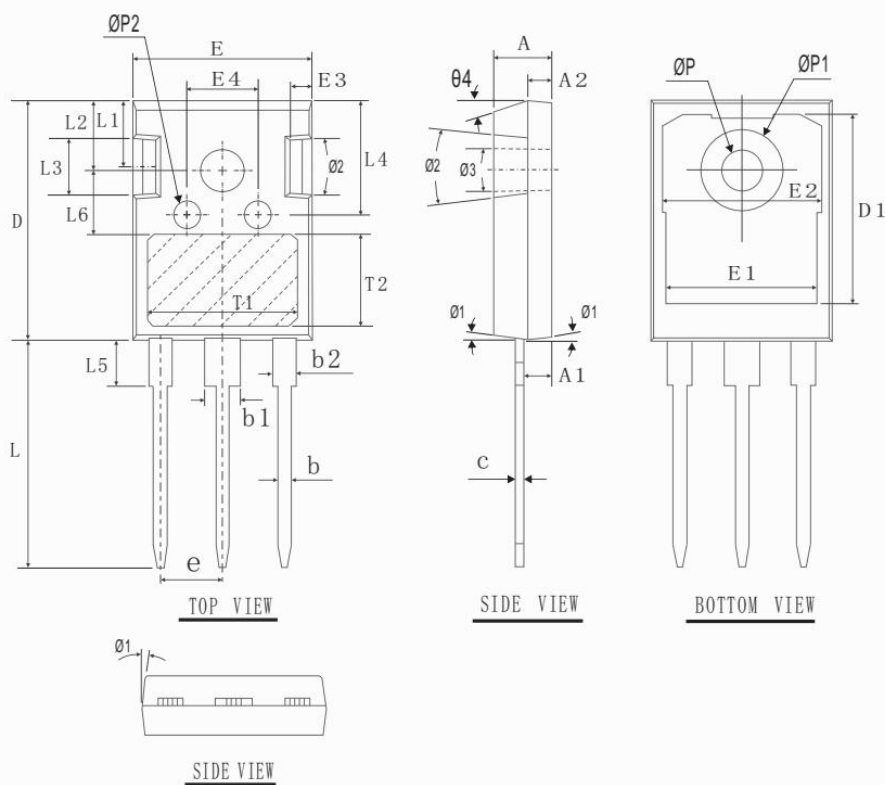


Figure8. Collector-Emitter Breakdown Voltage vs. Temperature

Option2:

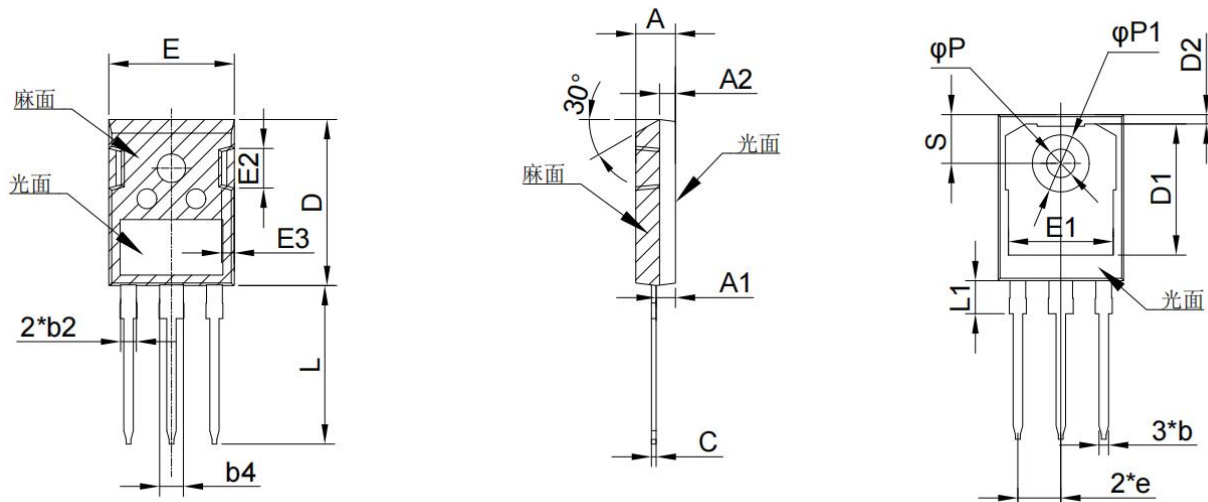


COMMON DIMENSIONS
(UNITS OF MEASURE=mm)

SYMBOL	MIN	NOM	MAX
A	4.80	5.00	5.20
A1	2.20	2.40	2.60
A2	1.85	2.00	2.15
b	1.10	1.20	1.30
b1	2.80	3.00	3.20
b2	1.80	2.00	2.20
c	0.52	0.62	0.72
D	20.35	20.65	20.95
D1	16.35	16.55	16.75
E	15.50	15.80	16.10
E1	13.10	13.30	13.50
E2	13.80	14.00	14.20
E3	1.45	1.60	1.75
E4	6.00	6.20	6.40
L	19.80	20.00	20.20
L1	5.88	5.98	6.08
L2	5.88	5.98	6.08
L3	4.90	5.00	5.10
L4	9.70	9.80	9.90
L5	4.10	4.30	4.50
theta1	4°	7°	10°
theta2	11°	14°	17°
theta3	1°	--	2°
theta4	10°	15°	20°
phiP	3.35	3.60	3.85
phiP1	--	--	7.30
phiP2	2.25	2.50	2.75
e	5.44BSC		
T1	12.80REF		
T2	7.80REF		
L6	5.50REF		

Option3:

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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