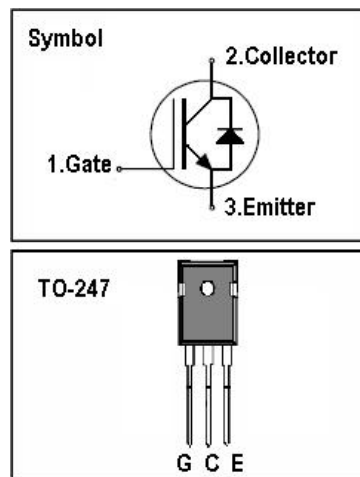


Features

- 650V 50A, $V_{CE(sat)}(typ.) = 1.70\text{ V}@50\text{A}$
- Field Stop IGBT Technology.
- 10 μs Short Circuit Capability.
- Square RBSOA.
- Positive V_{CE} (on) Temperature Coefficient.

Benefits

- High Efficiency for Motor Control.
- Rugged Performance.
- Excellent Current Sharing in Parallel Operation



Absolute Maximum Ratings

Symbol	Parameter	Value	Units
V_{CES}	Collector-Emitter Voltage	650	V
V_{GES}	Gate-Emitter Voltage	± 30	V
I_C	Continuous Collector Current ($T_C=25\text{ }^\circ\text{C}$)	100	A
	Continuous Collector Current ($T_C=100\text{ }^\circ\text{C}$)	50	A
I_{CM}	Pulsed Collector Current (Note 1)	200	A
I_F	Diode Continuous Forward Current ($T_C=100\text{ }^\circ\text{C}$)	50	A
I_{FM}	Diode Maximum Forward Current (Note 1)	200	A
t_{sc}	Short Circuit Withstand Time	10	μs
I_{sc}	Short Circuit Current	260	A
P_D	Maximum Power Dissipation ($T_C=25\text{ }^\circ\text{C}$)	416	W
P_D	Maximum Power Dissipation ($T_C=100\text{ }^\circ\text{C}$)	166	W
T_J	Operating Junction Temperature Range	-55 to +150	$^\circ\text{C}$
T_{STG}	Storage Temperature Range	-55 to +150	$^\circ\text{C}$

Thermal Characteristics

Symbol	Parameter	Max.	Units
$R_{th\ j-c}$	Thermal Resistance, Junction to case for IGBT	0.30	$^\circ\text{C}/\text{W}$
$R_{th\ j-c}$	Thermal Resistance, Junction to case for Diode	0.80	$^\circ\text{C}/\text{W}$
$R_{th\ j-a}$	Thermal Resistance, Junction to Ambient	80	$^\circ\text{C}/\text{W}$

Electrical Characteristics (T_C=25°C unless otherwise noted)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
BV _{CES}	Collector-Emitter Breakdown Voltage	V _{GE} = 0V, I _C = 250uA	650	-	-	V
I _{CES}	Collector-Emitter Leakage Current	V _{CE} = 650V, V _{GE} = 0V	-	-	250	uA
I _{GES}	Gate Leakage Current, Forward	V _{GE} = 30V, V _{CE} = 0V	-	-	100	nA
	Gate Leakage Current, Reverse	V _{GE} = -30V, V _{CE} = 0V	-	-	-100	nA
V _{GE(th)}	Gate Threshold Voltage	V _{GE} = V _{CE} , I _C = 250uA	4.0	-	5.5	V
V _{CE(sat)}	Collector-Emitter Saturation Voltage	V _{GE} = 15V, I _C = 50A	-	1.70		V
Q _g	Total Gate Charge	V _{CC} = 480V V _{GE} = 15V I _C = 50A	-	200		nC
Q _{ge}	Gate-Emitter Charge		-	28		nC
Q _{gc}	Gate-Collector Charge		-	100		nC
t _{d(on)}	Turn-on Delay Time	V _{CC} = 400V V _{GE} = 15V I _C = 50A R _G = 10Ω Inductive Load T _C = 25 °C	-	35	-	ns
t _r	Turn-on Rise Time		-	102	-	ns
t _{d(off)}	Turn-off Delay Time		-	181	-	ns
t _f	Turn-off Fall Time		-	150	-	ns
E _{on}	Turn-on Switching Loss		-	2.15	-	mJ
E _{off}	Turn-off Switching Loss		-	2.50	-	mJ
C _{ies}	Input Capacitance	V _{CE} = 25V	-	1650	-	pF
C _{oes}	Output Capacitance	V _{GE} = 0V	-	280	-	pF
C _{res}	Reverse Transfer Capacitance	f = 1MHz	-	110	-	pF
R _{Gint}	Integrated gate resistor	f = 1MHz; V _{pp} = 1V		1.60		Ω

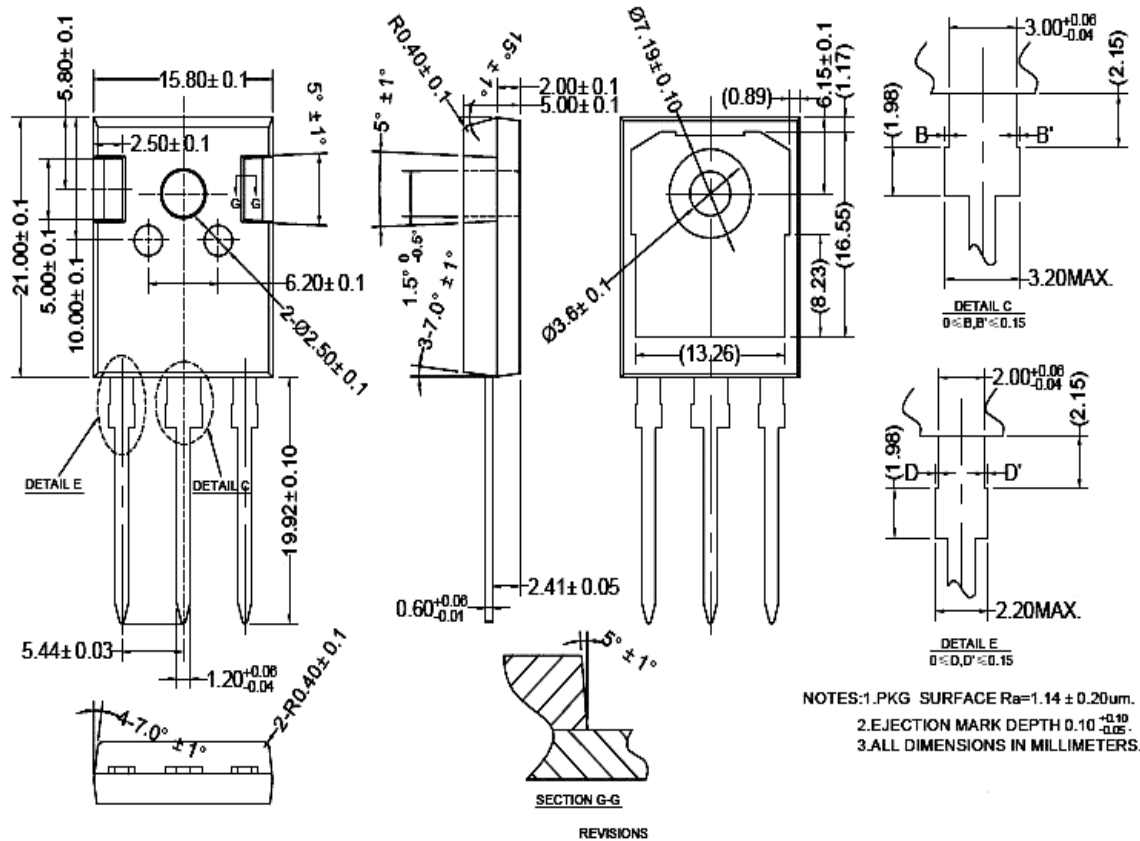
Electrical Characteristics of Diode (T_C=25°C unless otherwise noted)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
V _F	Diode Forward Voltage	I _F = 50A	-	1.6		V
t _{rr}	Diode Reverse Recovery Time	V _{CE} = 400V	-	106		ns
I _{rrm}	Diode peak Reverse Recovery Current	I _F = 50A	-	15		A
Q _{rr}	Diode Reverse Recovery Charge	dI _F /dt = 500A/us	-	850		nC

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature

TO247 PACKAGE OUTLINE



NOTES: 1. PKG SURFACE $Ra = 1.14 \pm 0.20 \mu m$.
 2. EJECTION MARK DEPTH $0.10^{+0.10}_{-0.05}$.
 3. ALL DIMENSIONS IN MILLIMETERS.

公差标注	公差值	表面粗糙度
0	± 0.2	$Ra 3.2 \sim 6.3$
0.0	± 0.1	$Ra 1.6 \sim 3.2$
0.00	± 0.01	$Ra 0.8 \sim 1.6$
0.000	± 0.005	$Ra 0.4 \sim 0.8$
0.0000	± 0.002	$Ra 0.2 \sim 0.4$

$0 \leq D, D' \leq 0.15$

NOTES: 1. PKG SURFACE $Ra = 1.14 \pm 0.20 \mu m$.
 2. EJECTION MARK DEPTH $0.10^{+0.10}_{-0.05}$.
 3. ALL DIMENSIONS IN MILLIMETERS.