T_{jmax} = 175°C Continuous Operation

- Low V_{CESAT} and Switching Losses
- Automotive Grade FS4 750 V Narrow Mesa IGBT
- Fast Recovery Diode Chip Technologies
- 4.2 kV Isolated DBC Substrate
- Easy to Integrate 6 pack Topology
- This Device is Pb Free and is RoHS Compliant

Typical Applications

- Hybrid and Electric Vehicle Traction Inverter Narrow Mesa IGBT

Pin Description

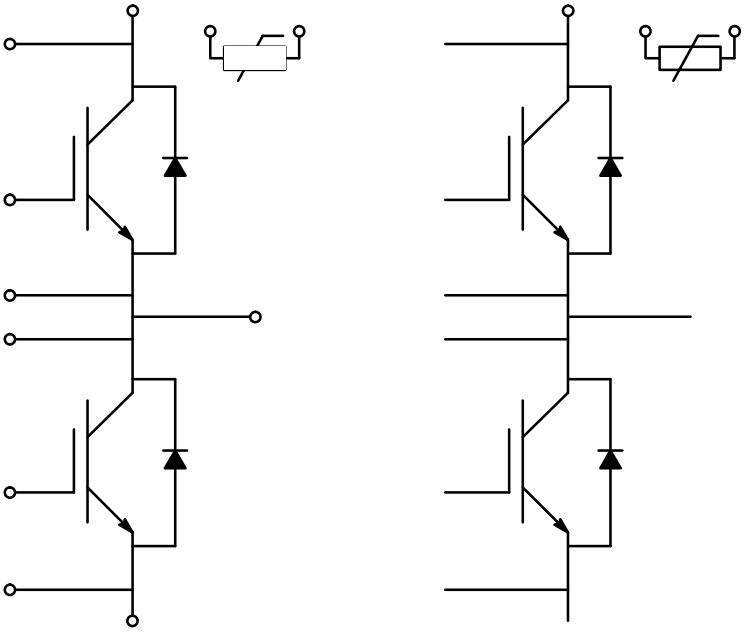


Figure 1. Pin Description

MODULE CHARACTERISTICS (T_{vj} = 25°C, Unless Otherwise Specified)

Symbol	Parameter	Rating	Unit
T_{vj}	Operating Junction Temperature	−40 to 175	°C
T_{STG}	Storage Temperature	−40 to 125	°C
V_{ISO}	Isolation Voltage (DC, 0 Hz, 1 s)	4200	V
L_{sCE}	Stray Inductance	10	nH
RCC'+EE'	Module Lead Resistance, Terminals − Chip	0.75	mΩ
G	Module Weight	700	g
CTI	Comparative Tracking Index	>200	−
d_{creep}	Creepage: Terminal to Heatsink Terminal to Terminal	9.0 9.0	mm
d_{clear}	Clearance: Terminal to Heatsink Terminal to Terminal	4.5 4.5	mm

Symbol	Parameters	Conditions	Min	Typ	Max	Unit
Δp	Pressure Drop in Cooling Circuit	10 L/min, 65°C, 50/50 EGW	−	95	−	mbar
P (Note 1)	Maximum Pressure in Cooling Loop (relative)	$T_{Baseplate}$ < 40°C $T_{Baseplate}$ > 40°C	− −	− −	2.5	

CHARACTERISTICS OF INVERSE DIODE (T_{vj} = 25°C, Unless Otherwise Specified)

Symbol	Parameters	Conditions		Min	Typ	Max	Unit
V_F	Diode Forward Voltage (Terminal)	I_F = 500 A	T_{vj} = 25°C	−	1.60	1.85	V
	Diode Forward Voltage (Chip)	I_F = 500 A	T_{vj} = 25°C T_{vj} = 150°C T_{vj} = 175°C	− − −	1.53 1.45 1.40	1.78 − −	
		I_F = 680 A	T_{vj} = 25°C T_{vj} = 150°C T_{vj} = 175°C	− − −	1.65 1.61 1.57	− − −	
E_{rr}	Reverse Recovery Energy	I_F = 500 A, V_R = 400 V, V_{GE} = +15/−8 V, $R_{g.on}$ = 4.7 Ω	di/dt = 3.5 A/nS, T_{vj} = 25°C di/dt = 3.0 A/nS, T_{vj} = 150°C di/dt = 2.8 A/nS, T_{vj} = 175°C	− − −	3 8 10	− − −	mJ
Q_{RR}	Recovered Charge	I_F = 500 A, V_R = 400 V, V_{GE} = −8 V, $R_{g.on}$ = 4.7 Ω	di/dt = 3.5 A/nS, T_{vj} = 25°C di/dt = 3.0 A/nS, T_{vj} = 150°C di/dt = 2.8 A/nS, T_{vj} = 175°C	− − −	11 32 38	− − −	μC
I_{rr}	Peak Reverse Recovery Current	I_F = 500 A, V_R = 400 V, V_{GE} = −8 V, $R_{g.on}$ = 4.7 Ω	di/dt = 3.5 A/nS, T_{vj} = 25°C di/dt = 3.0 A/nS, T_{vj} = 150°C di/dt = 2.8 A/nS, T_{vj} = 175°C	− − −	141 247 265	− − −	A

NTC SENSOR CHARACTERISTICS (T_{vj} = 25°C, Unless Otherwise Specified)

Symbol	Parameters	Conditions	Min	Typ	Max	Unit
R_{25} (Note 3)	Rated Resistance	T_C = 25°C	−	5147	−	Ω
ΔR/R	Deviation of R_{105}	T_C = 105°C, R_{105} = 472 Ω	5	−	5	%
P_{25}	Power Dissipation	T_C = 25°C	−	−	32	mW
$B_{25/55}$	B−Value	$R = R_{25} \exp [B_{25/55} (1/T−1/298)]$	−	3340	−	K
$B_{25/85}$	B−Value	$R = R_{25} \exp [B_{25/85} (1/T−1/298)]$	−	3360	−	K
$B_{25/105}$	B−Value	$R = R_{25} \exp [B_{25/105} (1/T−1/298)]$	−	3364	−	K

3. Measured value at terminals.

THERMAL CHARACTERISTICS

Symbol	Parameter	Min	Typ	Max	Unit
IGBT.$R_{th,J−F}$	R_{th}, Junction to Fluid, 10Tj6.5 0 0 6.5 132.831555 Tc(1/298)])TjET226.998 291509 T59.754 29181 Tc0 Tw(25)Tj1.1164 .J6.56g(, Junction				

TYPICAL CHARACTERISTICS

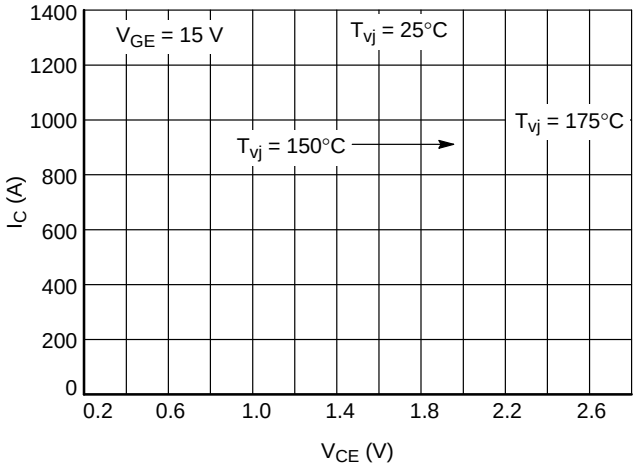


Figure 2. IGBT Output Characteristic

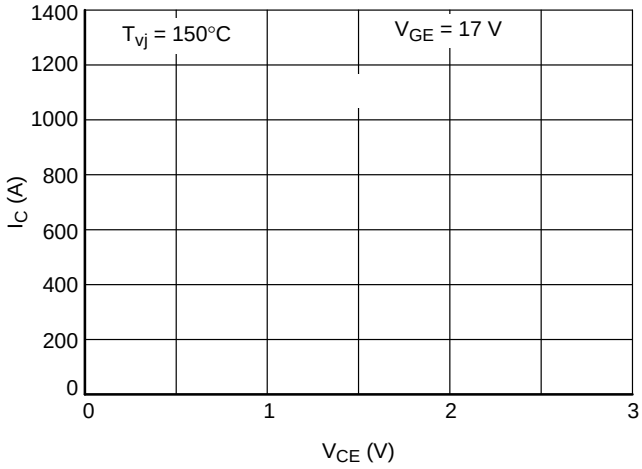


Figure 3. IGBT Output Characteristic

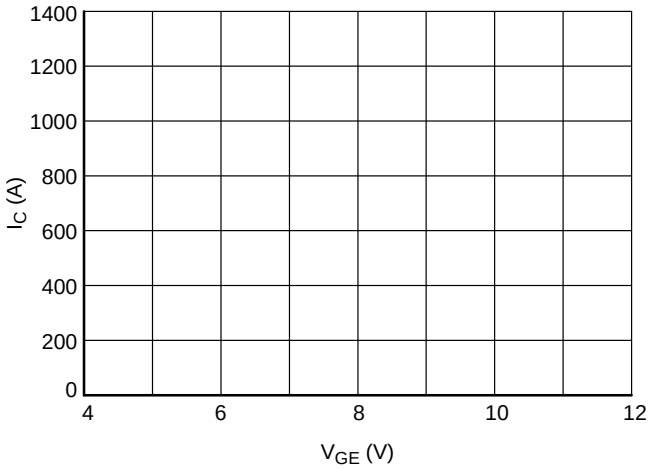


Figure 4. IGBT Transfer Characteristic

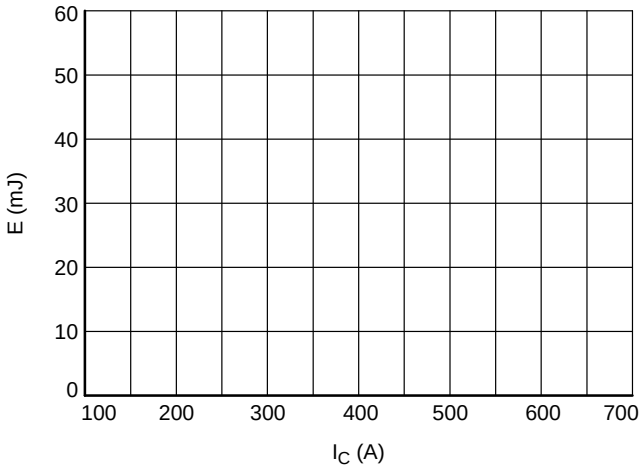


Figure 5. IGBT Turn−on Losses vs. I_C

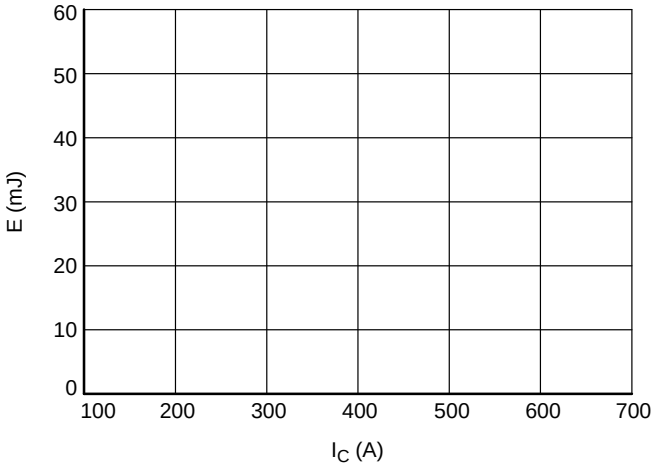


Figure 6. IGBT Turn−off Losses vs. I_C

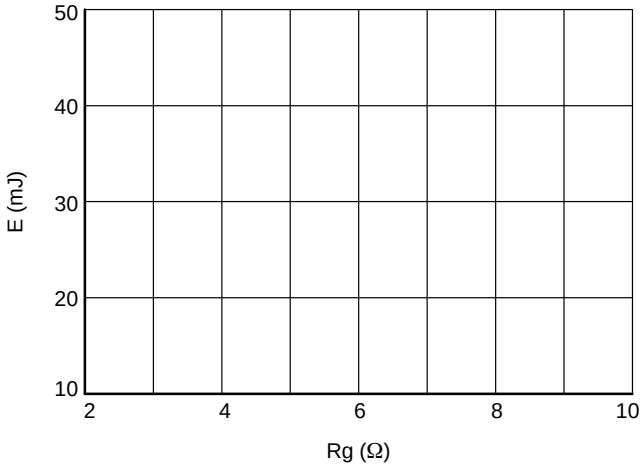
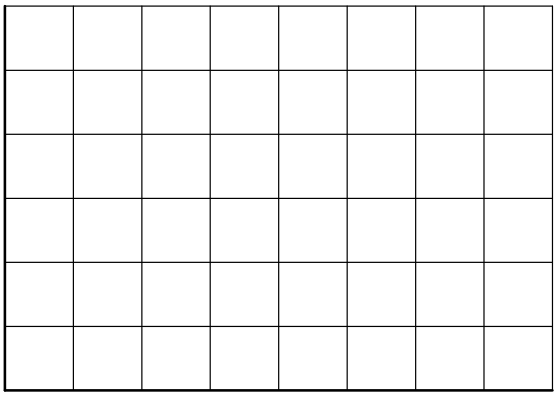


Figure 7. Eon vs. Rg

TYPICAL CHARACTERISTICS

TYPICAL CHARACTERISTICS



TYPICAL CHARACTERISTICS

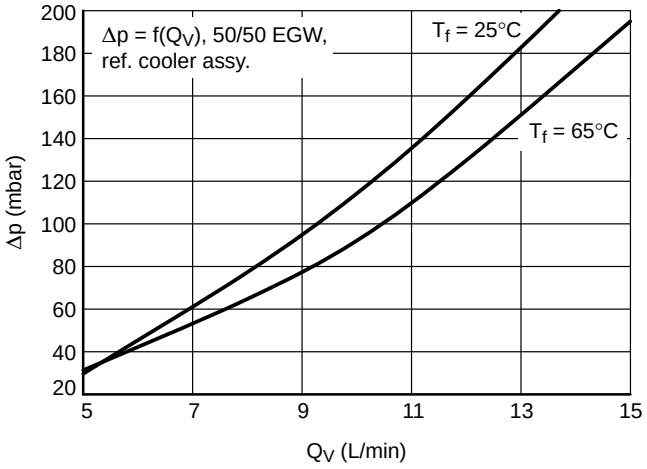


Figure 20. Pressure Drop In Cooling Circuit

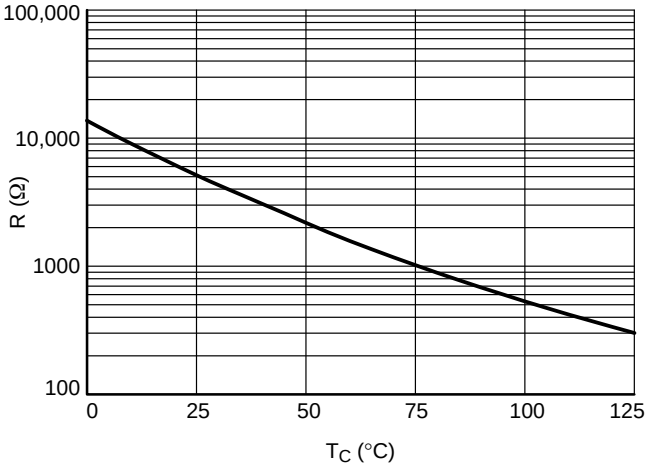


Figure 21. NTC Thermistor − Temperature Characteristic (Typical)

PACKAGE DIMENSIONS

SSDC33, 154.50x92.0 (SPB)
CASE 183AB
ISSUE A

PACKAGE DIMENSIONS

SSDC33, 154.50x92.0 (SPB)
CASE 183AB
ISSUE A

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