MOSFET - SiC Power, Single N-Channel, TO247-4L

650 V, 44 m , 47 A

NVH4L060N065SC1

Features

- Typ. $R_{DS(on)}$ = 44 m @ V_{GS} = 18 V
  Typ. $R_{DS(on)}$ = 60 m @ V_{GS} = 15 V
- Ultra Low Gate Charge ($Q_{G(tot)}$ = 74 nC)
- Low Capacitance (C_{oss} = 133 pF)
- 100% Avalanche Tested
- AEC ïQ101 Qualified and PPAP Capable
- This Device is Pbïree and is RoHS Compliant

Typical Applications

- Automotive On Board Charger
- Automotive DC/DC Converter for EV/HEV

MAXIMUM RATINGS (T_J = 25°C unless otherwise noted)

Parameter			Symbol	Value	Unit
Drain ïto ïSource Voltage			V_{DSS}	650	V
Gate ïto ïSource Voltage			V_{GS}	ï8/+22	V
Recommended Operation Values of Gate ïto ïSource Voltage		T_C < 175°C	V_{GSop}	ï5/+18	V
Continuous Drain Current (Note 1)	Steady State	T_C = 25°C	I_D	47	A
Power Dissipation (Note 1)			P_D	176	W
Continuous Drain Current (Note 1)	Steady State	T_C = 100°C	I_D	33	A
Power Dissipation (Note 1)			P_D	88	W
Pulsed Drain Current (Note 2)	T_C = 25°C		I_{DM}	152	A
Operating Junction and Storage Temperature Range			T_J, T_{stg}	ï55 to +175	°C
Source Current (Body Diode)					

THERMAL RESISTANCE MAXIMUM RATINGS

Parameter	Symbol	Max	Unit
Junction ïto ïCase ï Steady State (Note 1)	R_{JC}	0.85	°C/W
Junction ïto ïAmbient ï Steady State (Note 1)	R_{JA}	40	

ELECTRICAL CHARACTERISTICS (T_J = 25°C unless otherwise specified)

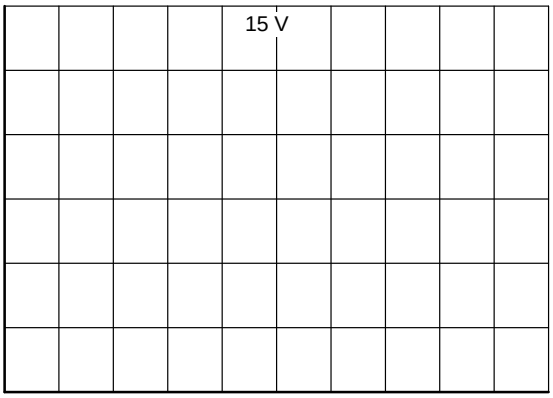
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Drain ïto ïSource Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0 V, I_D = 1 mA	650	ï	ï	V
Drain ïto ïSource Breakdown Voltage Temperature Coefficient	$V_{(BR)DSS}/T_J$	I_D				

ELECTRICAL CHARACTERISTICS (T_J = 25°C unless otherwise specified) (continued)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
DRAIN ïSOURCE DIODE CHARACTERISTICS						
Reverse Recovery Time	t_{RR}	V_{GS} = ï5/18 V, I_{SD} = 20 A, dI_S/dt = 1000 A/ s	ï	17.7	ï	ns
Reverse Recovery Charge	Q_{RR}		ï	90.6	ï	nC
Reverse Recovery Energy	E_{REC}		ï	8.7	ï	J
Peak Reverse Recovery Current	I_{RRM}		ï	10.2	ï	A
Charge time	Ta		ï	9.8	ï	ns
Discharge time	Tb		ï	7.8	ï	ns

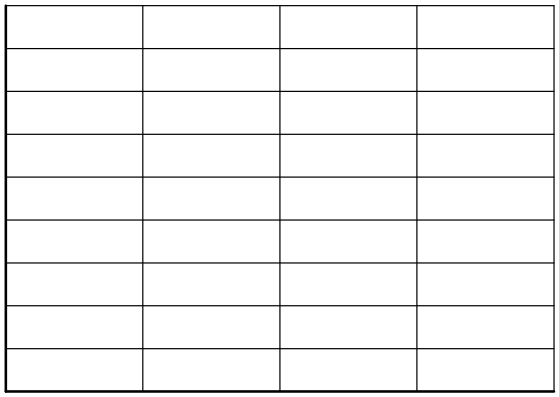
Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

TYPICAL CHARACTERISTICS



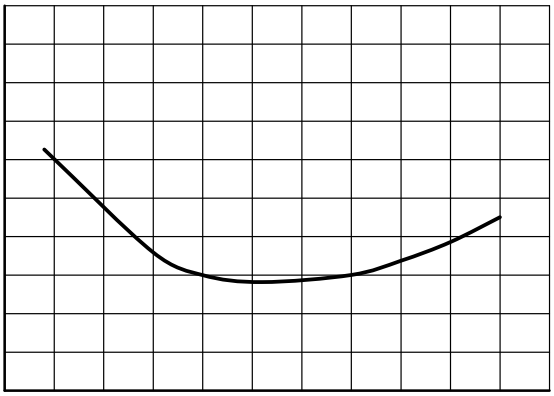
V_{DS}, DRAIN ïTO ïSOURCE VOLTAGE (V)

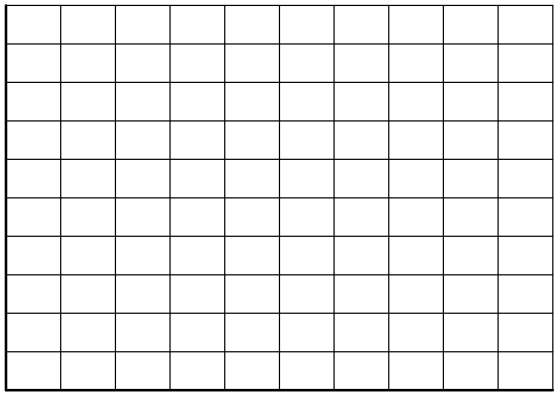
Figure 1. On ïRegion Characteristics

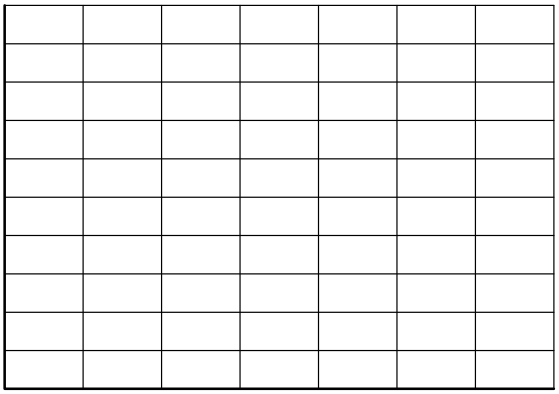


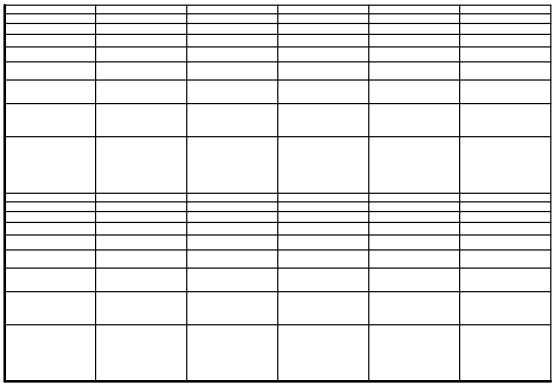
I_D, DRAIN CURRENT (A)

Figure 2. Normalized On ïResistance vs. Drain Current and Gate Voltage









TYPICAL CHARACTERISTICS

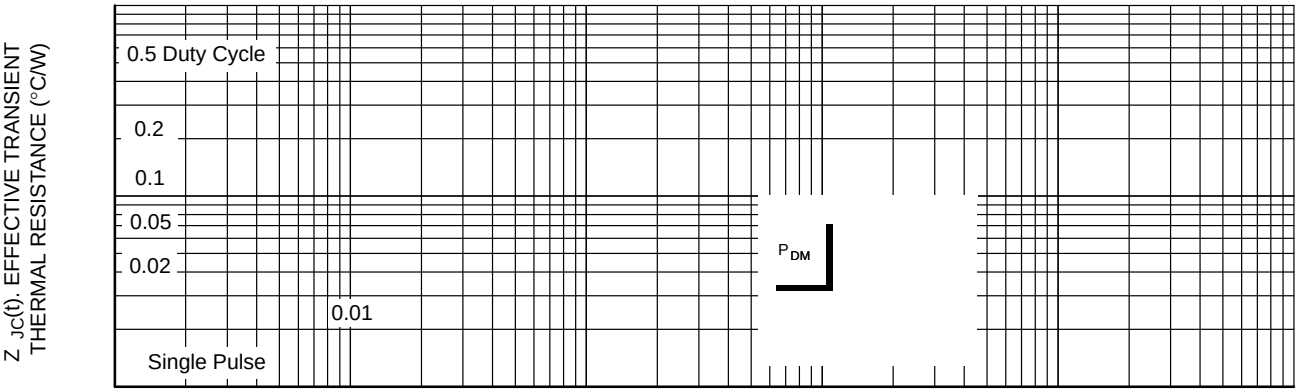
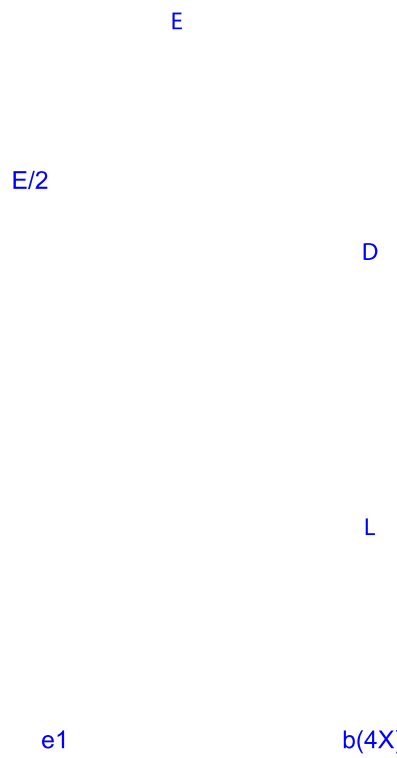


Figure 13. Junction ïto ïCase Thermal Response

PACKAGE DIMENSIONS

TO ï247 ï4LD
CASE 340CJ
ISSUE A



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