

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

650 V, 44 mΩ, 47 A

NVH4L060N065SC1

Features

- Typ. $R_{DS(on)} = 44\text{ m}\Omega$ @ $V_{GS} = 18\text{ V}$
 Typ. $R_{DS(on)} = 60\text{ m}\Omega$ @ $V_{GS} = 15\text{ V}$
- Ultra Low Gate Charge ($Q_{tot} = 74\text{ nC}$)
- Low Capacitance ($C_{SS} = 133\text{ pF}$)
- 100% Avalanche Tested
- AEC iQ101 Qualified and PPAP Capable
- This Device is PbFree and is RoHS Compliant

Typical Applications

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

MAXIMUM RATINGS ($T_J = 25^\circ\text{C}$ unless otherwise noted)

Parameter		Symbol	Value	Unit	
Drain to Source Voltage		V_{DSS}	650	V	
Gate to Source Voltage		V_{GS}	-8/+22	V	
Recommended Operation Values of Gate to Source Voltage		V_{GSop}	-5/+18	V	
Continuous Drain Current (Note 1)	Steady State	$T_C = 25^\circ\text{C}$	I_D	47	A
			P_D	176	W
Continuous Drain Current (Note 1)	Steady State	$T_C = 100^\circ\text{C}$	I_D	33	A
			P_D	88	W
Pulsed Drain Current (Note 2)	$T_C = 25^\circ\text{C}$		I_{DM}	152	A
Operating Junction and Storage Temperature Range		T_J, T_{stg}	-55 to +175	$^\circ\text{C}$	
Source Current (Body Diode)					

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THERMAL RESISTANCE MAXIMUM RATINGS

Parameter	Symbol	Max	Unit
Junction to Case Steady State (Note 1)	R_{JC}	0.85	°C/W
Junction to Ambient Steady State (Note 1)	R_{JA}	40	

ELECTRICAL CHARACTERISTICS ($T_J = 25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
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OFF CHARACTERISTICS

Drain to Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0\text{ V}, I_D = 1\text{ mA}$	650			V
Drain to Source Breakdown Voltage Temperature Coefficient	$V_{(BR)DSS}/T_J$	I_D				

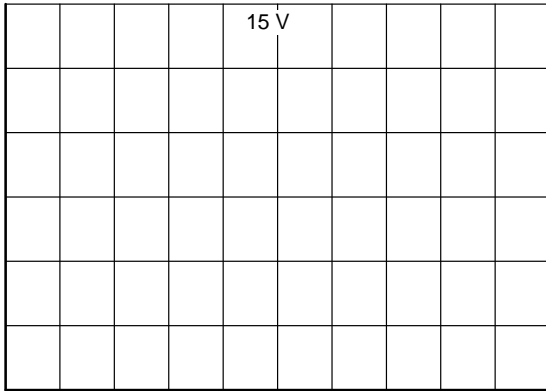
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ELECTRICAL CHARACTERISTICS (T_J = 25°C unless otherwise specified) (continued)

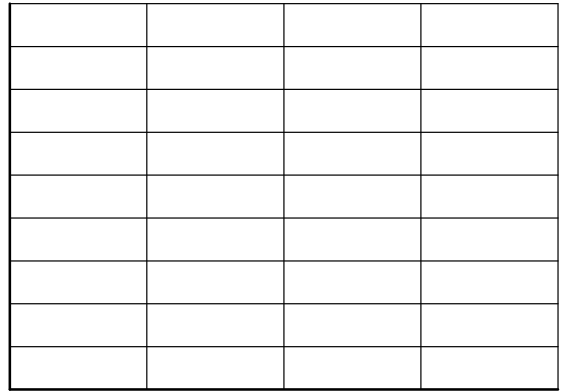
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
DRAIN iSOURCE DIODE CHARACTERISTICS						
Reverse Recovery Time	t _{RR}	V _{GS} = i5/18 V, I _{SD} = 20 A, di _S /dt = 1000 A/ s	i	17.7	i	ns
Reverse Recovery Charge	Q _{RR}		i	90.6	i	nC
Reverse Recovery Energy	E _{REC}		i	8.7	i	J
Peak Reverse Recovery Current	I _{RRM}		i	10.2	i	A
Charge time	T _a		i	9.8	i	ns
Discharge time	T _b		i	7.8	i	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.

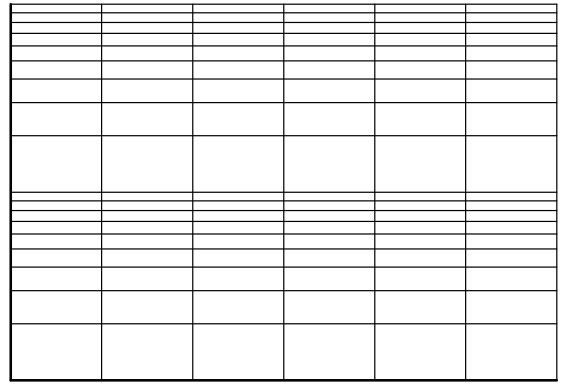
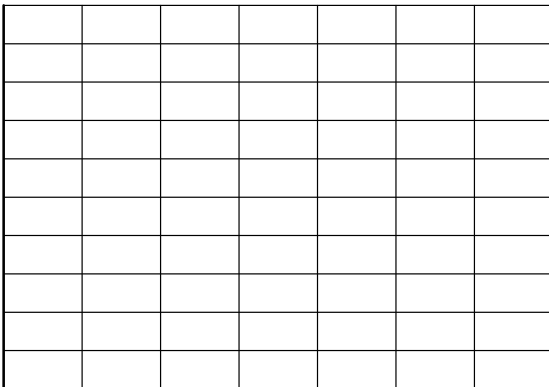
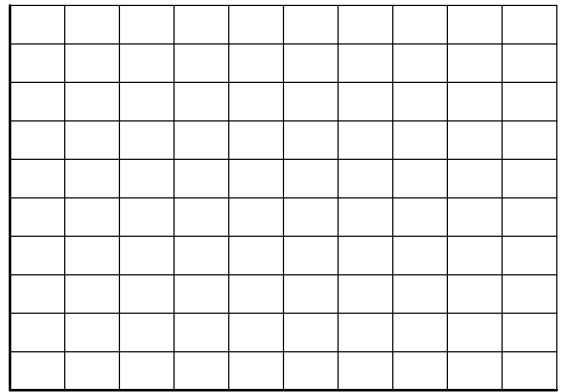
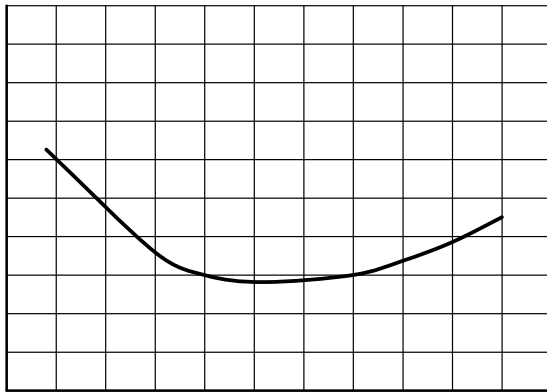
TYPICAL CHARACTERISTICS



V_{DS} , DRAIN TO SOURCE VOLTAGE (V)
Figure 1. On-Region Characteristics



I_D , DRAIN CURRENT (A)
Figure 2. Normalized On-Resistance vs. Drain Current and Gate Voltage



TYPICAL CHARACTERISTICS

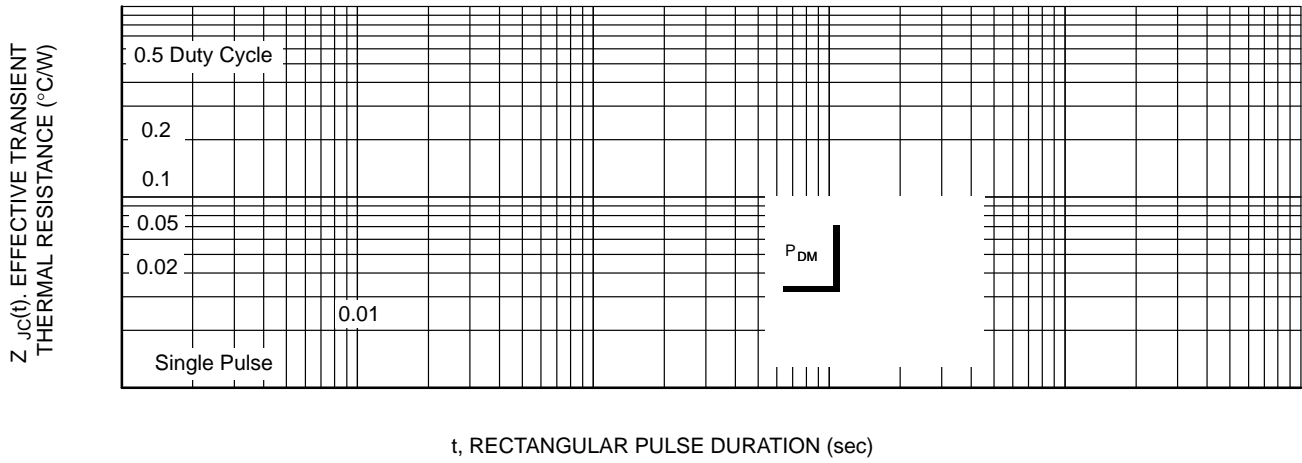


Figure 13. Junction to Case Thermal Response

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PACKAGE DIMENSIONS

TO i247 i4LD
CASE 340CJ
ISSUE A

E

E/2

D

L

e1

b(4X)

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