Silicon Carbide (SiC) MOSFET – EliteSiC, 33 mohm, 650 V, M2, TO-247-4L

NTH4L045N065SC1

Features

- Typ. $R_{DS(on)}$ = 33 mΩ @ V_{GS} = 18 V
  Typ. $R_{DS(on)}$ = 45 mΩ @ V_{GS} = 15 V
- Ultra Low Gate Charge ($Q_{G(tot)}$ = 105 nC)
- High Speed Switching with Low Capacitance (C_{oss} = 162 pF)
- 100% Avalanche Tested
- T_J = 175°C
- This Device is Halide Free and RoHS Compliant with exemption 7a, Pb−Free 2LI (on second level interconnection)

Typical Applications

- SMPS (Switching Mode Power Supplies)
- Solar Inverters
- UPS (Uninterruptable Powere Supplies)
- Energy Storages

MAXIMUM RATINGS (T_J = 25°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		T_C < 175°C	V_{GSop}	−5/+18	V
Continuous Drain Current (Note 1)	Steady State	T_C = 25°C	I_D	55	A
Power Dissipation (Note 1)	Steady State	T_C = 25°C	P_D	187	W
Continuous Drain Current (Note 1)	Steady State	T_C = 100°C	I_D		

THERMAL CHARACTERISTICS

Parameter	Symbol	Max	Unit
Junction−to−Case − Steady State (Note 1)	$R_{\theta JC}$	0.8	°C/W
Junction−to−Ambient − Steady State (Note 1)	$R_{\theta JA}$	40	

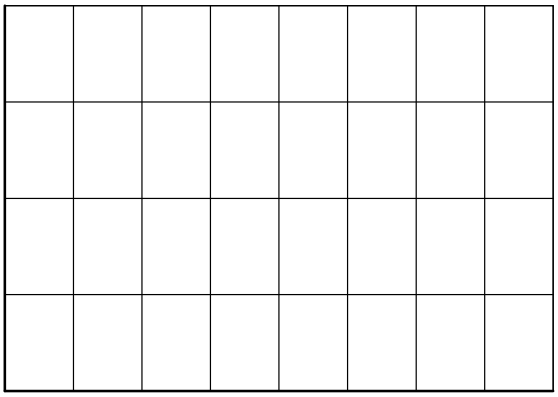
ELECTRICAL CHARACTERISTICS (T_J = 25°C unless otherwise specified)

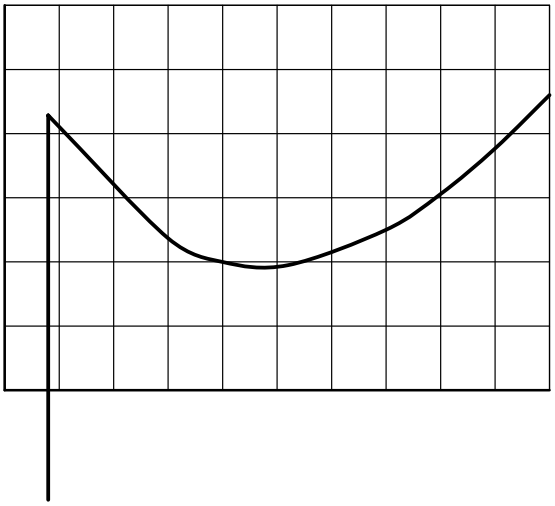
Parameter	Symbol	Test Condition		Min	Typ	Max	Unit
OFF CHARACTERISTICS							
Drain−to−Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0 V, I_D = 1 mA		650	−	−	V
Drain−to−Source Breakdown Voltage Temperature Coefficient	$V_{(BR)DSS}/T_J$	I_D = 20 mA, referenced to 25°C		−	0.15	−	V/°C
Zero Gate Voltage Drain Current	I_{DSS}	V_{GS} = 0 V, V_{DS} = 650 V	T_J = 25°C	−	−	10	μA
			T_J = 175°C	−	−	1	mA
Gate−to−Source Leakage Current	I_{GSS}	V_{GS} = +22/−8 V, V_{DS} = 0 V		−	−	250	nA
ON CHARACTERISTICS (Note 2)							
Gate Threshold Voltage	$V_{GS(TH)}$	V_{GS} = V_{DS}, I_D = 8 mA		1.8	2.8		

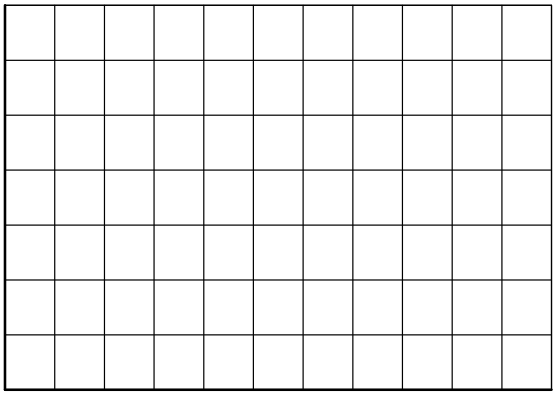
ELECTRICAL CHARACTERISTICS (T_J = 25°C unless otherwise specified) (continued)

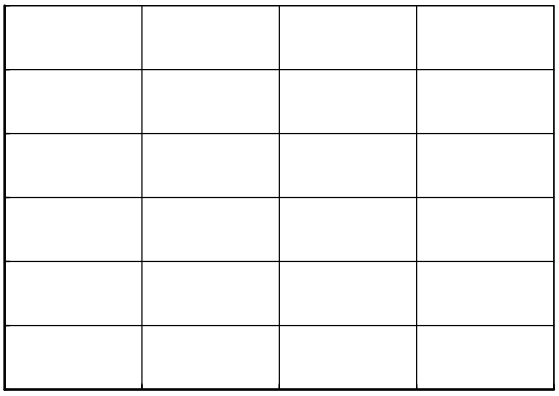
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit

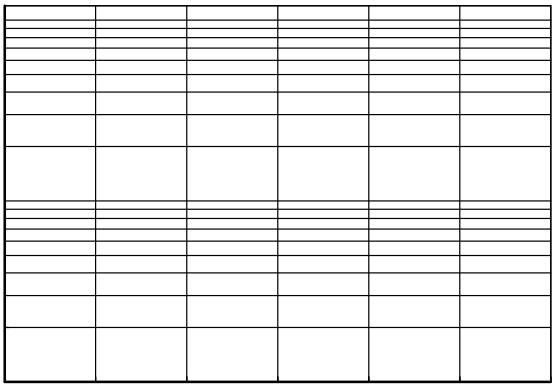
TYPICAL CHARACTERISTICS











TYPICAL CHARACTERISTICS (CONTINUED)

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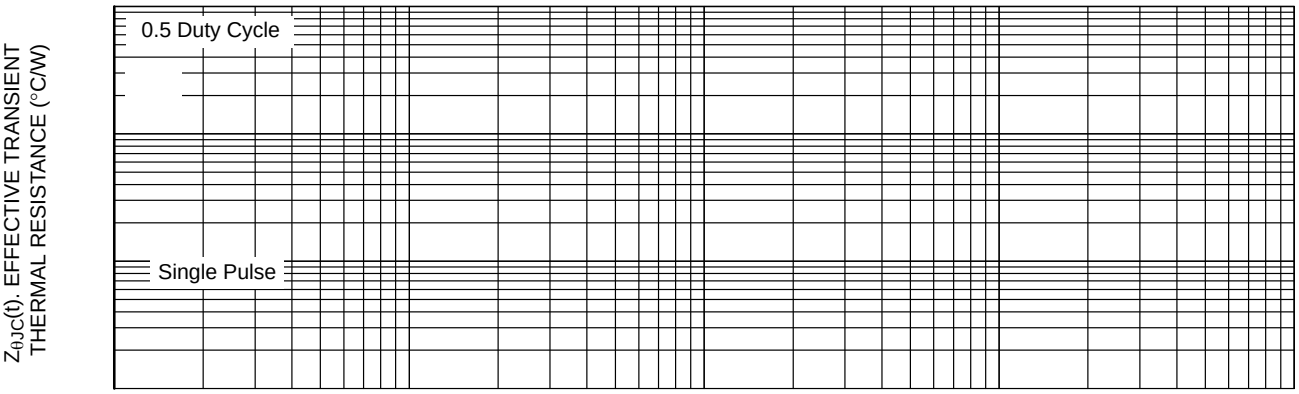

Figure 13. Junction−to−Case Thermal Response

TO−247−4LD
CASE 340CJ
ISSUE A

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