

Silicon Carbide (SiC)  
MOSFET – EliteSiC,  
 40 mohm, 1200 V, M3S,  
 TO-247-3L

NTHL040N120M3S

**Features**

- Typ.  $R_{DS(on)} = 40 \text{ m}\Omega @ V_{GS} = 18 \text{ V}$
- Ultra Low Gate Charge ( $Q_{G(tot)} = 75 \text{ nC}$ )
- High Speed Switching with Low Capacitance ( $C_{oss} = 80 \text{ pF}$ )
- 100% Avalanche Tested
- This Device is Halide Free and RoHS Compliant with exemption 7a, Pb-Free 2LI (on second level interconnection)

**Typical Applications**

- Solar Inverters
- Electric Vehicle Charging Stations
- UPS (Uninterruptible Power Supplies)
- Energy Storage Systems
- SMPS (Switch Mode Power Supplies)

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

Parameter			Symbol	Value	Unit
Drain-to-Source Voltage			$V_{DSS}$	1200	V
Gate-to-Source Voltage			$V_{GS}$	-10/+22	V
Continuous Drain Current (Notes 1, 3)	Steady State	$T_C = 25^\circ\text{C}$	$I_D$	54	A
			$P_D$	231	W
Power Dissipation (Note 1)					
Continuous Drain Current (Notes 1, 3)	Steady State	$T_C = 100^\circ\text{C}$	$I_D$	38	A
			$P_D$	115	W
Power Dissipation (Note 1)					
Pulsed Drain Current (Note 2)	$T_C = 25^\circ\text{C}$		$I_{DM}$	134	A



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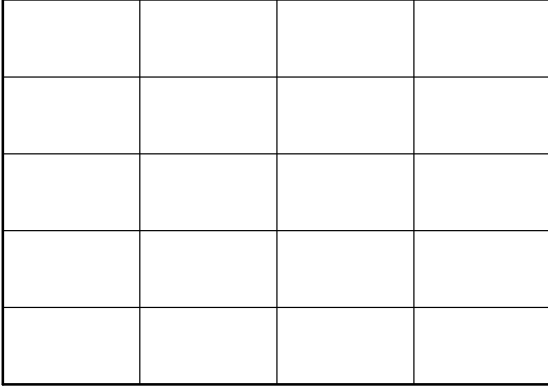
**Table 3. ELECTRICAL CHARACTERISTICS** ( $T_J = 25^\circ\text{C}$  unless otherwise specified) (continued)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
<b>SOURCE-DRAIN DIODE CHARACTERISTICS</b>						
Continuous Source-Drain Diode Forward Current	$I_{SD}$	$V_{GS} = -3\text{ V}, T_C = 25^\circ\text{C}$ (Note 6)	-	-	45	A
Pulsed Source-Drain Diode Forward Current (Note 2)	$I_{SDM}$		-	-		

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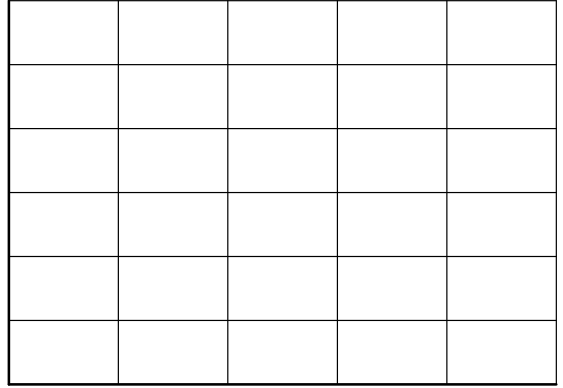
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## TYPICAL CHARACTERISTICS

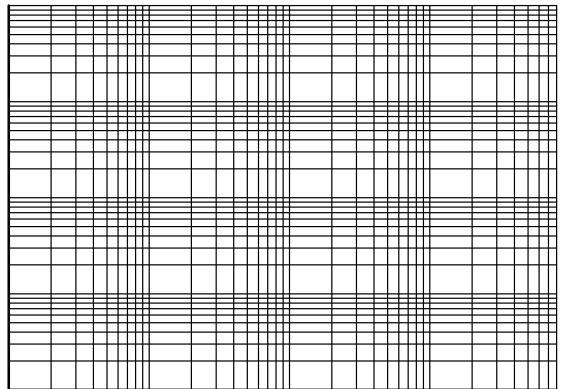
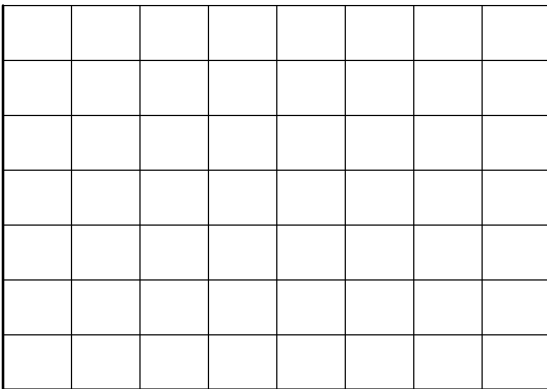
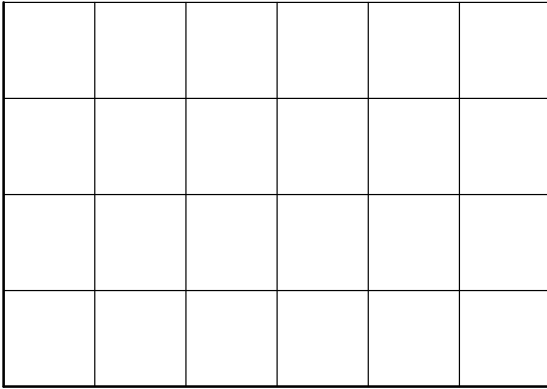


$V_{DS}$ , DRAIN-TO-

**Figure 7. Switching Loss vs. Drain-to-Source Voltage**



**Figure 8. Switching Loss vs. Gate Resistance**







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