

Silicon Carbide (SiC) MOSFET – EliteSiC, 19 mohm, 650 V, M2, TO-247-4L

NTH4L025N065SC1

Features

- Typ. $R_{DS(on)} = 19 \text{ m}\Omega @ V_{GS} = 18 \text{ V}$ Typ. $R_{DS(on)} = 25 \text{ m}\Omega @ V_{GS} = 15 \text{ V}$
- Ultra Low Gate Charge ($Q_{G(tot)} = 164 \text{ nC}$)
- Low Capacitance ($C_{oss} = 278 \text{ pF}$)
- 100% Avalanche Tested
- $T_J = 175^{\circ}C$
- 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 Power Supplies)
- Energy Storages

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

Param	eter		Symbol	Value	Unit
Drain to Source Voltage	V _{DSS}	650	V		
Gate to Source Voltage			V _{GS}	8/+22	V
Recommended Operatio of Gate to Source Volta	n Values ge	T _C < 175°C	V _{GSop}	5/+18	V
Continuous Drain Current (Note 1)	Steady State	$T_C = 25^{\circ}C$	Ι _D	99	А
Power Dissipation (Note 1)			PD	348	W
Continuous Drain Current (Note 1)	Steady T _C = 100°C State		Ι _D	70	A
Power Dissipation (Note 1)			PD	174	W
Pulsed Drain Current (Note 2)	T _C	= 25°C	I _{DM}	323	A
Operating Junction and S Range	Storage Te	emperature	T _J , T _{stg}	55 to +175	°C
Source Current (Body Di		ا _S	75	А	
Single Pulse Drain to S Energy ($I_{L(pk)} = 11.2 \text{ A}$, L	Ilanche (Note 3)	E _{AS}	62	mJ	
Maximum Lead Tempera (1/8" from case for 5 s)	ΤL	°C			

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

1. The entire application environment impacts the thermal resistance values shown,

they are not constants and are only valid for the particuli5ey are .itiant areiant areiant 6.

ISTANCE MAXIMUM RATINGS

Parameter	Symbol	Max	Unit
State (Note 1)	$R_{ ext{ heta}JC}$	0.43	°C/W
dy State (Note 1)	$R_{\theta JA}$	40	

TERISTICS ($T_J = 25^{\circ}C$ unless otherwise specified)

Parameter	Symbol	Test Condition	Min	Тур	Max	Unit

OFF CHARACTERISTICS

Drain to Source Breakdown Voltage	V _{(BR)DSS}	$V_{GS} = 0 \text{ V}, \text{ I}_{D} = 1 \text{ mA}$	650		V
Drain to Source Breakdown Voltage Temperature Coefficient	V _{(BR)DSS} /T _J	$I_D = 20 \text{ mA}$, referenced to 25°C			

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

Parameter	Symbol	Test Condition	Min	Тур	Max	Unit						
DRAIN-SOURCE DIODE CHARACTERISTICS												
Reverse Recovery Time	t _{RR}	$V_{GS} = 5/18 \text{ V}, I_{SD} = 45 \text{ A},$		25		ns						
Reverse Recovery Charge	Q _{RR}	$di_{S}/dl = 1000 A/\mu s$		171		nC						
Reverse Recovery Energy	E _{REC}			15.8		μJ						
Peak Reverse Recovery Current	I _{RRM}			13.7		А						
Charge Time	Та			14.9		ns						
Discharge Time	Tb			10.6		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 (CONTINUED)

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