ELECTRONICS, INC.
44 FARRAND STREET
BLOOMFIELD, NJ 07003
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NTE2969
MOSFET
N–Channel, Enhancement Mode
High Speed Switch

Features:

- Avalanche Rugged Technology
- Rugged Gate Oxide Technology
- Low Input Capacitance
- Improved Gate Charge
- Extended Safe Operating Area
- Lower Leakage Current
- Low Static Drain–Source On–State Resistance

Absolute Maximum Ratings:

Drain–Source Voltage, V_{DSS} 400V

Drain Current, I_D

Continuous

T_C = +25°C 25A

T_C = +100°C 15.1A

Pulsed (Note 1) 100A

Gate–Source Voltage, V_{GS} . . . . . ±30V

Gate Current (Pulsed), I_{GM} . . . . . ±1.5A

Single Pulsed Avalanche Energy (Note 2), E_{AS} 1429mJ

Avalanche Current (Note 1), I_{AS} 25A

Repetitive Avalanche Energy (Note 1), E_{AR} 27.8mJ

Peak Diode Recovery dv/dt (Note 3), dv/dt 4.0V/ns

Total Power Dissipation (T_C = +25°C), P_D 278W

Derate Above 25°C . . . . . 2.22W/°C

Operating Junction Temperature Range, T_J . . . . . –55° to +150°C

Storage Temperature Range, T_{stg} . . . . . –55° to +150°C

Maximum Lead Temperature (During Soldering, 1/8” from case, 5sec), T_L . . . . . +300°C

Thermal Resistance:

Maximum Junction–to–Case, R_{thJC} . . . . . 0.45°C/W

Typical Case–to–Sink, R_{thCS} . . . . . 0.24°C/W

Maximum Junction–to–Ambient, R_{thJA} . . . . . 40°C/W

Note 1. Repetitive Rating: Pulse width limited by maximum junction temperature.

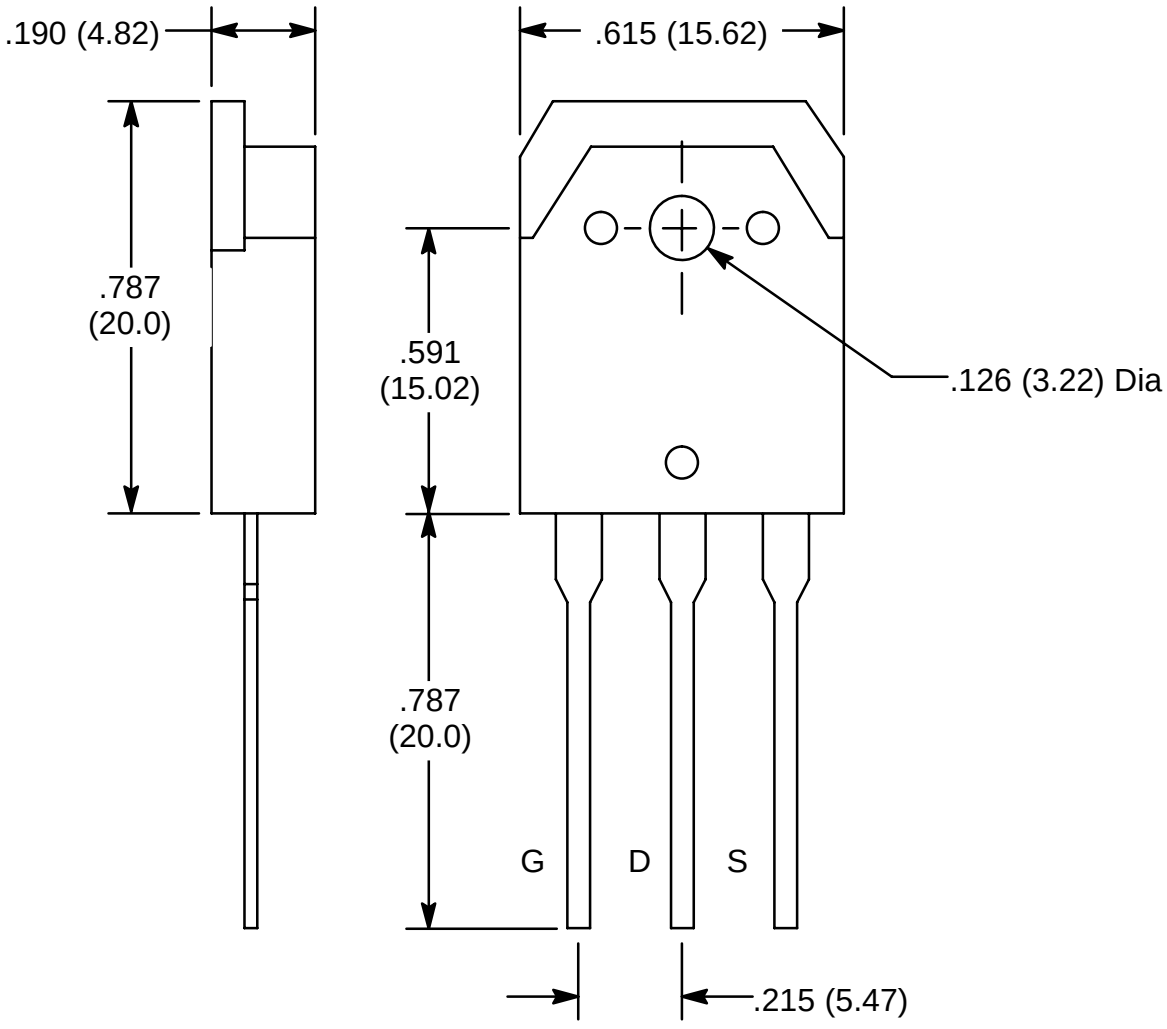
Note 2. L = 4mH, I_{AS} = 25A, V_{DD} = 50V, R_G = 27Ω, Starting T_J = +25°C.

Note 3. $I_{SD} \le 25A$, $di/dt \le 320A/\mu s$, $V_{DD} \le BV_{DSS}$, Starting T_J = +25°C.

Electrical Characteristics: (T_C = +25°C unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain–Source Breakdown Voltage	BV_{DSS}	V_{GS} = 0V, I_D = 250µA	400	–	–	V
Breakdown Voltage Temperature Coefficient	$\Delta BV/\Delta T_J$	I_D = 250µA	–	0.20	–	V/°C
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = 5V, I_D = 250µA	2.0	–	4.0	V
Gate–Source Leakage Forward	I_{GSS}	V_{GS} = 30V	–	–	100	nA
Gate–Source Leakage Reverse	I_{GSS}	V_{GS} = –30V	–	–	–100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 400V, V_{GS} = 0	–	–	10	µA
		V_{DS} = 320V, T_C = +150°C	–	–	100	µA
Static Drain–Source ON Resistance	$R_{DS(on)}$	V_{GS} = 10V, I_D = 12.5A, Note 4	–	–	0.2	Ω
Forward Transconductance	g_{fs}	V_{DS} = 50V, I_D = 12.5A, Note 4	–	18.91	–	mhos
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 25V, f = 1MHz	–	3180	4130	pF
Output Capacitance	C_{oss}		–	435	500	pF
Reverse Transfer Capacitance	C_{rss}		–	200	240	pF
Turn–On Delay Time	$t_{d(on)}$	V_{DD} = 200V, I_D = 25A, R_G = 5.3Ω, Note 4, Note 5	–	22	55	ns
Rise Time	t_r		–	22	60	ns
Turn–Off Delay Time	$t_{d(off)}$		–	127	260	ns
Fall Time	t_f		–	38	85	ns
Total Gate Charge	Q_g	V_{GS} = 10V, I_D = 25A, V_{DS} = 320V, Note 4, Note 5	–	140	182	nC
Gate–Source Charge	Q_{gs}		–	21	–	nC
Gate–Drain (“Miller”) Charge	Q_{gd}		–	64.8	–	nC
Source–Drain Diode Ratings and Characteristics						
Continuous Source Current	I_S	(Body Diode)	–	–	25	A
Pulse Source Current	I_{SM}	(Body Diode) Note 1	–	–	100	A
Diode Forward Voltage	V_{SD}	T_J = +25°C, I_S = 25A, V_{GS} = 0V, Note 4	–	–	1.5	V
Reverse Recovery Time	t_{rr}	T_J = +25°C, I_F = 25A, dI_F/dt = 100A/µs	–	484	–	ns
Reverse Recovery Charge	Q_{rr}		–	7.6	–	µC

Note 1. Repetitive Rating: Pulse width limited by maximum junction temperature.
Note 4. Pulse Test: Pulse Width ≤ 250µs, Duty Cycle ≤ 2%.
Note 5. Essentially independent of operating temperature.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