ELECTRONICS, INC.
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NTE2991
MOSFET
N−Channel, Enhancement Mode
High Speed Switch

Features:
- Ultra Low On−Resistance
- Dynamic dv/dt Rating
- +175°C Operating Temperature
- Fast Switching
- Fully Avalanche Rated

Absolute Maximum Ratings:

Drain Current, I_D
- Continuous (V_{GS} = 10V)
  - T_C = +25°C (Note 1) 110A
  - T_C = +100°C 80A
- Pulsed (Note 2) 390A

Total Power Dissipation (T_C = +25°C), P_D 200W
- Derate Above 25°C . . . . . 1.3W/°C

Gate−Source Voltage, V_{GS} . . . . . ±20V

Single Pulsed Avalanche Energy (I_{AS} = 62A, L = 138µH, Note 3), E_{AS} 264mJ

Avalanche Current (Note 2), I_{AR} 62A

Repetitive Avalanche Energy (Note 2), E_{AR} 20mJ

Peak Diode Recovery dv/dt (Note 4), dv/dt 5.0V/ns

Operating Junction Temperature Range, T_J . . . . . −55° to +175°C

Storage Temperature Range, T_{stg} . . . . . −55° to +175°C

Maximum Lead Temperature (During Soldering, 1.6mm from case, 10sec), T_L . . . . . +300°C

Maximum Thermal Resistance:
- Junction−to−Case, R_{thJC} . . . . . 0.75°C/W
- Junction−to−Ambient, R_{thJA} . . . . . 62°C/W

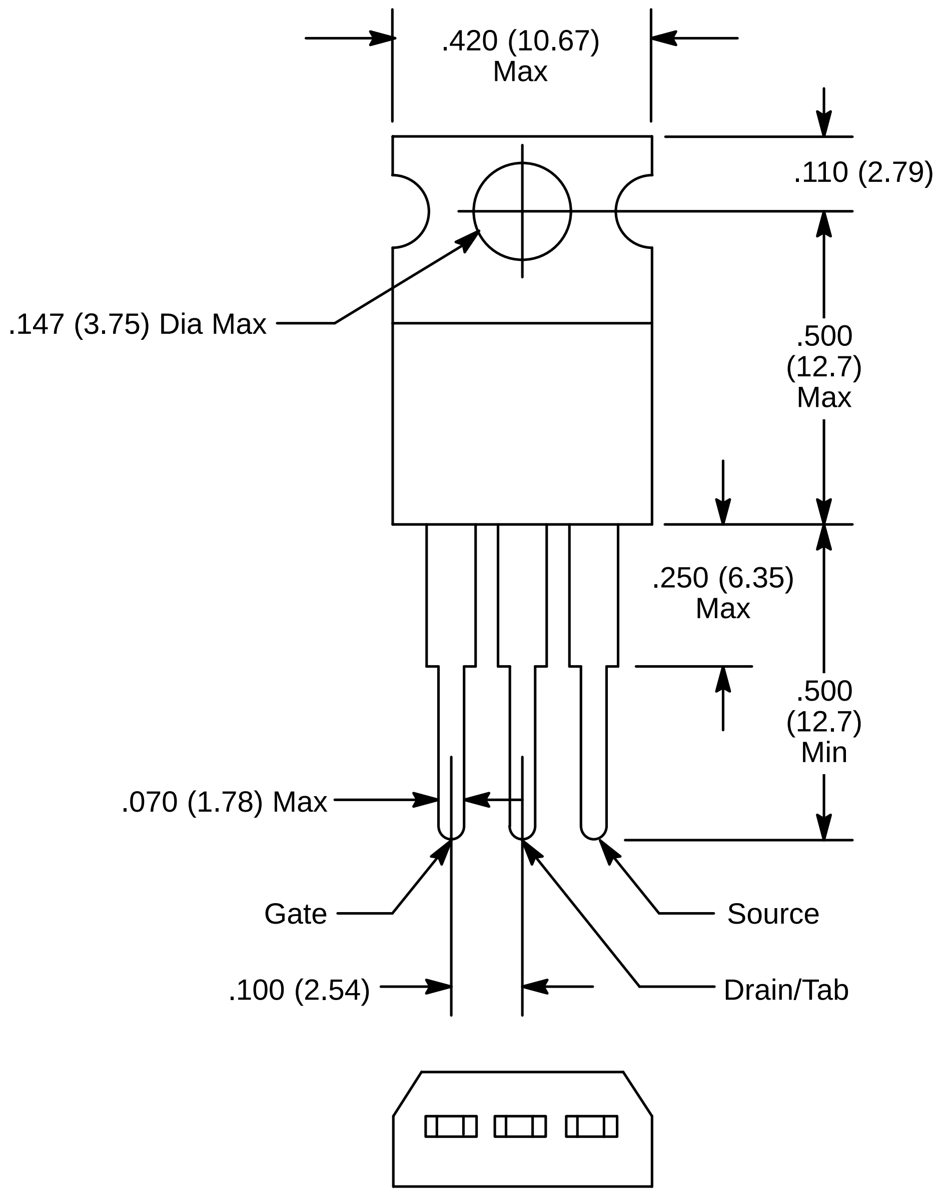
Typical Thermal Resistance, Case−to−Sink (Flat, greased surface), R_{thCS} . . . . . 0.50°C/W

Note 1. Calculated continuous current based on maximum allowable junction temperature. Package limitation current is 75A.
Note 2. Repetitive Rating: Pulse width limited by maximum junction temperature.
Note 3. This is a calculated value limited to T_J = +175°C.
Note 4. $I_{SD} \leq$ 62A, di/dt $\leq$ 207A/µs, $V_{DD} \leq V_{(BR)DSS}$, $T_J \leq$ +175°C.

Electrical Characteristics: (T_J = +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	55	−	−	V
Breakdown Voltage Temperature Coefficient	$\Delta V_{(BR)DSS}/\Delta T_J$	Reference to +25°C, I_D = 1mA	−	0.057	−	V/°C
Static Drain−Source ON Resistance	$R_{DS(on)}$	V_{GS} = 10V, I_D = 62A, Note 5	−	−	8.0	Ω
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}$, I_D = 250μA	2.0	−	4.0	V
Forward Transconductance	g_{fs}	V_{DS} = 25V, I_D = 62A, Note 5	44	−	−	mhos
Drain−to−Source Leakage Current	I_{DSS}	V_{DS} = 55V, V_{GS} = 0	−	−	25	μA
		V_{DS} = 44V, V_{GS} = 0V, T_C = +150°C	−	−	250	μA
Gate−Source Leakage Forward	I_{GSS}	V_{GS} = 20V	−	−	100	nA
Gate−Source Leakage Reverse	I_{GSS}	V_{GS} = −20V	−	−	−100	nA
Total Gate Charge	Q_g	V_{GS} = 10V, I_D = 62A, V_{DS} = 44V	−	−	146	nC
Gate−Source Charge	Q_{gs}		−	−	35	nC
Gate−Drain (“Miller”) Charge	Q_{gd}		−	−	54	nC
Turn−On Delay Time	$t_{d(on)}$	V_{DD} = 28V, I_D = 62A, R_G = 4.5Ω, V_{GS} = 10V, Note 5	−	14	−	ns
Rise Time	t_r		−	101	−	ns
Turn−Off Delay Time	$t_{d(off)}$		−	50	−	ns
Fall Time	t_f		−	65	−	ns
Internal Drain Inductance	L_D	Between lead, 6mm (0.25”) from package and center of die contact	−	4.5	−	nH
Internal Source Inductance	L_S		−	7.5	−	nH
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 25V, f = 1MHz	−	3247	−	pF
Output Capacitance	C_{oss}		−	781	−	pF
Reverse Transfer Capacitance	C_{rss}		−	211	−	pF
Source−Drain Diode Ratings and Characteristics						
Continuous Source Current	I_S	(Body Diode)	−	−	110	A
Pulse Source Current	I_{SM}	(Body Diode) Note 2	−	−	390	A
Diode Forward Voltage	V_{SD}	T_J = +25°C, I_S = 62A, V_{GS} = 0V, Note 5	−	−	1.3	V
Reverse Recovery Time	t_{rr}	T_J = +25°C, I_F = 62A, di/dt = 100A/μs, Note 5	−	69	104	ns
Reverse Recovery Charge	Q_{rr}		−	143	215	μC
Forward Turn−On Time	t_{on}	Intrinsic turn−on time is neglegible (turn−on is dominated by $L_S + L_D$)				

Note 2. Repetitive Rating: Pulse width limited by maximum junction temperature.
Note 5. Pulse Width ≤ 400μs, Duty Cycle ≤ 2%.


.420 (10.67)
Max
.110 (2.79)
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Max
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Min
.070 (1.78) Max
Gate
Source
.100 (2.54)
Drain/Tab