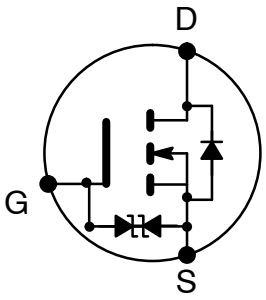
ELECTRONICS, INC.
44 FARRAND STREET
BLOOMFIELD, NJ 07003
(973) 748–5089
http://www.nteinc.com

NTE2948
MOSFET
N–Channel, Enhancement Mode
High Speed Switch
TO251 Type Package



Features:
- Low Drain–Source ON Resistance: $R_{DS(ON)}$ = 4Ω (Typ)
- High Forward Transfer Admittance: $|y_{fs}|$ = 0.6S (Typ)
- Low Leakage Current: I_{DSS} = 100μA (Max) (V_{DS} = 400V)
- Enhancement Model: V_{th} = 2 to 4V (V_{DS} = 10V, I_D = 1mA)

Applications:
- DC–DC Converter
- Relay Drive
- Motor Drive

Absolute Maximum Ratings: (T_A = +25°C unless otherwise specified)

Drain–Source Voltage, V_{DSS} 400V
Drain–Gate Voltage (R_{GS} = 20kΩ), V_{DGR} 400V
Gate–Source Voltage, V_{GS} . . . . . ±30V
Drain Current (Note 1), I_D
- DC 1A
- Pulsed 3A

Drain Power Dissipation (T_C = +25°C), P_D 20W
Single Pulsed Avalanche Energy (Note 2), E_{AS} 113mJ
Avalanche Current, I_{AR} 1A
Repetitive Avalanche Energy (Note 3), E_{AR} 2mJ
Channel Temperature, T_{ch} . . . . . +150°C
Storage Temperature Range, T_{stg} . . . . . –55° to +150°C
Maximum Thermal Resistance:
- Channel–to–Case, R_{thCHC} . . . . . 6.25°C/W
- Channel–to–Ambient, R_{thCHA} . . . . . 125°C/W

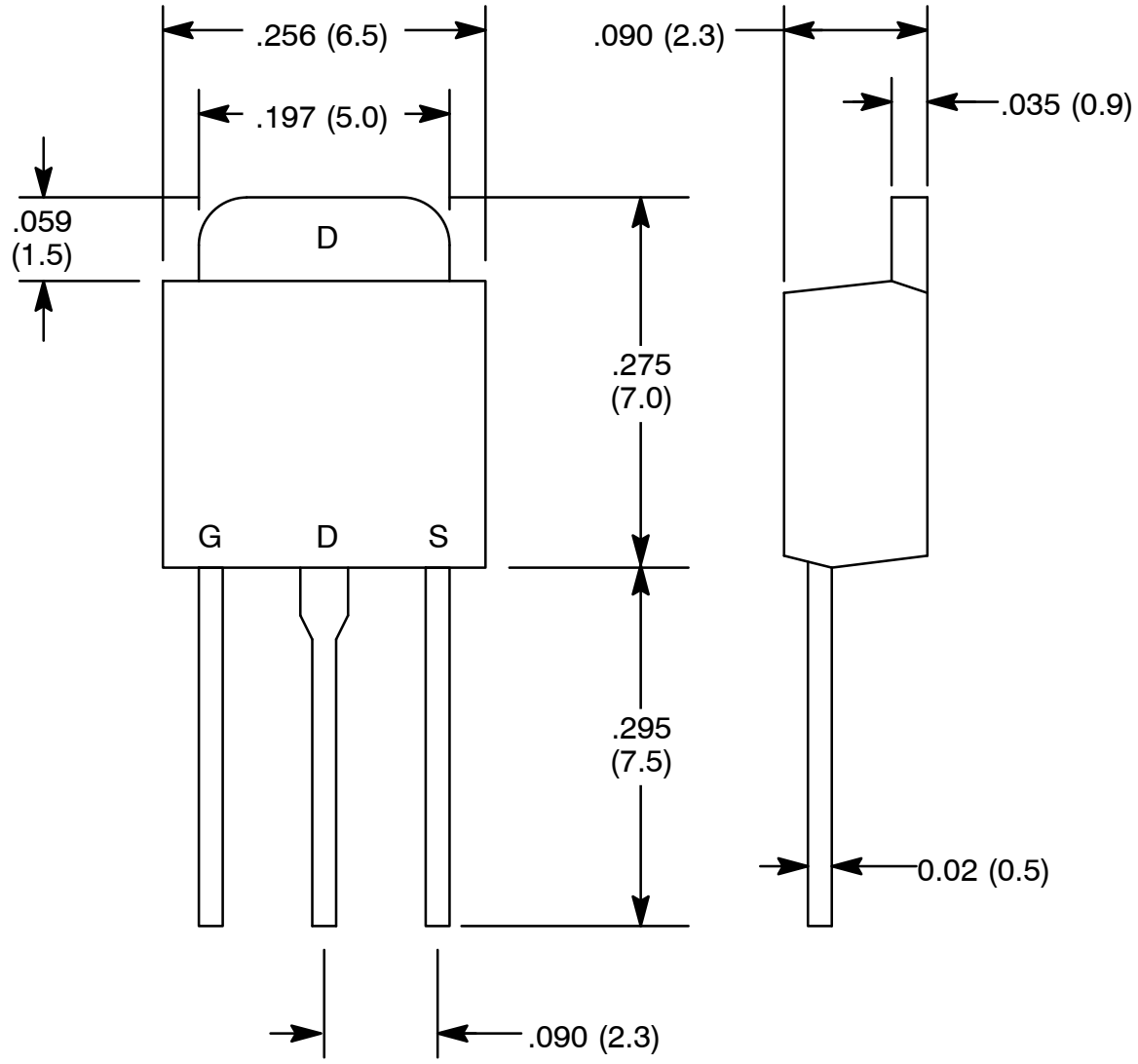
Note 1. Please use devices on condition that the channel temperature is below +150°C.
Note 2. V_{DD} = 90V, T_{ch} = +25°C (initial), L = 183mH, R_G = 25Ω.
Note 3. Repetitive rating: pulse width limited by maximum channel temperature.

RoHS 2002/95/EC

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Gate–Source Leakage Current	I_{GSS}	V_{GS} = ±25V, V_{DS} = 0V	–	–	±10	μA
Gate–Source Breakdown Voltage	BV_{GSS}	I_G = ±10μA, V_{DS} = 0V	±30	–	–	V
Drain Cutoff Current	I_{DSS}	V_{DS} = 400V, V_{GS} = 0	–	–	100	μA
Drain–Source Breakdown Voltage	BV_{DSS}	I_D = 10mA, V_{GS} = 0V	480	–	–	V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = 10V, I_D = 1mA	2.0	–	4.0	V
Drain–Source ON Resistance	$R_{DS(on)}$	V_{GS} = 10V, I_D = 0.5A	–	4.2	5.5	Ω
Forward Transfer Admittance	$\|y_{fs}\|$	V_{DS} = 10V, I_D = 0.5A	0.3	0.6	–	S
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 10V, f = 1MHz	–	145	–	pF
Output Capacitance	C_{oss}		–	80	–	pF
Reverse Transfer Capacitance	C_{rss}		–	35	–	pF
Turn–On Delay Time	$t_{d(on)}$	V_{DD} = 200V, V_{GS} = 10V, I_D = 0.5A, R_L = 400Ω, Duty ≤ 1%, t_w = 10μs	–	56	–	ns
Rise Time	t_r		–	14	–	ns
Turn–Off Delay Time	$t_{d(off)}$		–	75	–	ns
Fall Time	t_f		–	26	–	ns
Total Gate Charge	Q_g	V_{GS} = 10V, I_D = 1A, V_{DD} = 320V	–	5.7	–	nC
Gate–Source Charge	Q_{gs}		–	3.0	–	nC
Gate–Drain (“Miller”) Charge	Q_{gd}		–	2.7	–	nC
Source–Drain Diode Ratings and Characteristics						
Continuous Drain Reverse Current	I_{DR}	Note 1	–	–	1	A
Pulse Drain Reverse Current	I_{DRP}	Note 1	–	–	3	A
Diode Forward Voltage	V_{SDF}	I_{DR} = 1A, V_{GS} = 0V	–	–	–1.7	V
Reverse Recovery Time	t_{rr}	I_{DR} = 1A, V_{GS} = 0V, dI_{DR}/dt = 100A/μs	–	650	–	ns
Reverse Recovery Charge	Q_{rr}		–	14.6		μC

Note 1. Please use devices on condition that the channel temperature is below +150°C.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