ELECTRONICS, INC.
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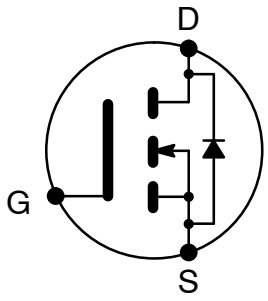
NTE2933
MOSFET
N–Channel, Enhancement Mode
High Speed Switch
TO3PML Type Package

Features:
- Avalanche Rugged Technology
- Rugged Gate Oxide Technology
- Lower Input Capacitance
- Improved Gate Charge
- Extended Safe Operating Area
- Lower R_{DS}(on): 0.437≤ Typ
- Lower Leakage Current: 10° A (Max) @ V_{DS} = 400V



Absolute Maximum Ratings:

Drain–to–Source Voltage, V_{DSS} 400V
Drain Current, I_D
  Continuous
    T_C = +25°C 8A
    T_C = +100°C 5.1A
  Pulsed (Note 1) 44A
Total Power Dissipation (T_C = +25°C), P_D 85W
  Derate Above 25°C . . . . . 0.68W/°C
Gate–Source Voltage, V_{GS} . . . . . ±30V
Single Pulsed Avalanche Energy (Note 2), E_{AS} 549mJ
Avalanche Current (Note 1), I_{AR} 8A
Repetitive Avalanche Energy (Note 1), E_{AR} 8.5mJ
Peak Diode Recovery dv/dt (Note 3), dv/dt 4.0V/ns
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, Junction–to–Case, R_{thJC} . . . . . 1.46°C/W
Thermal Resistance, Junction–to–Ambient, R_{thJA} . . . . . 40°C/W

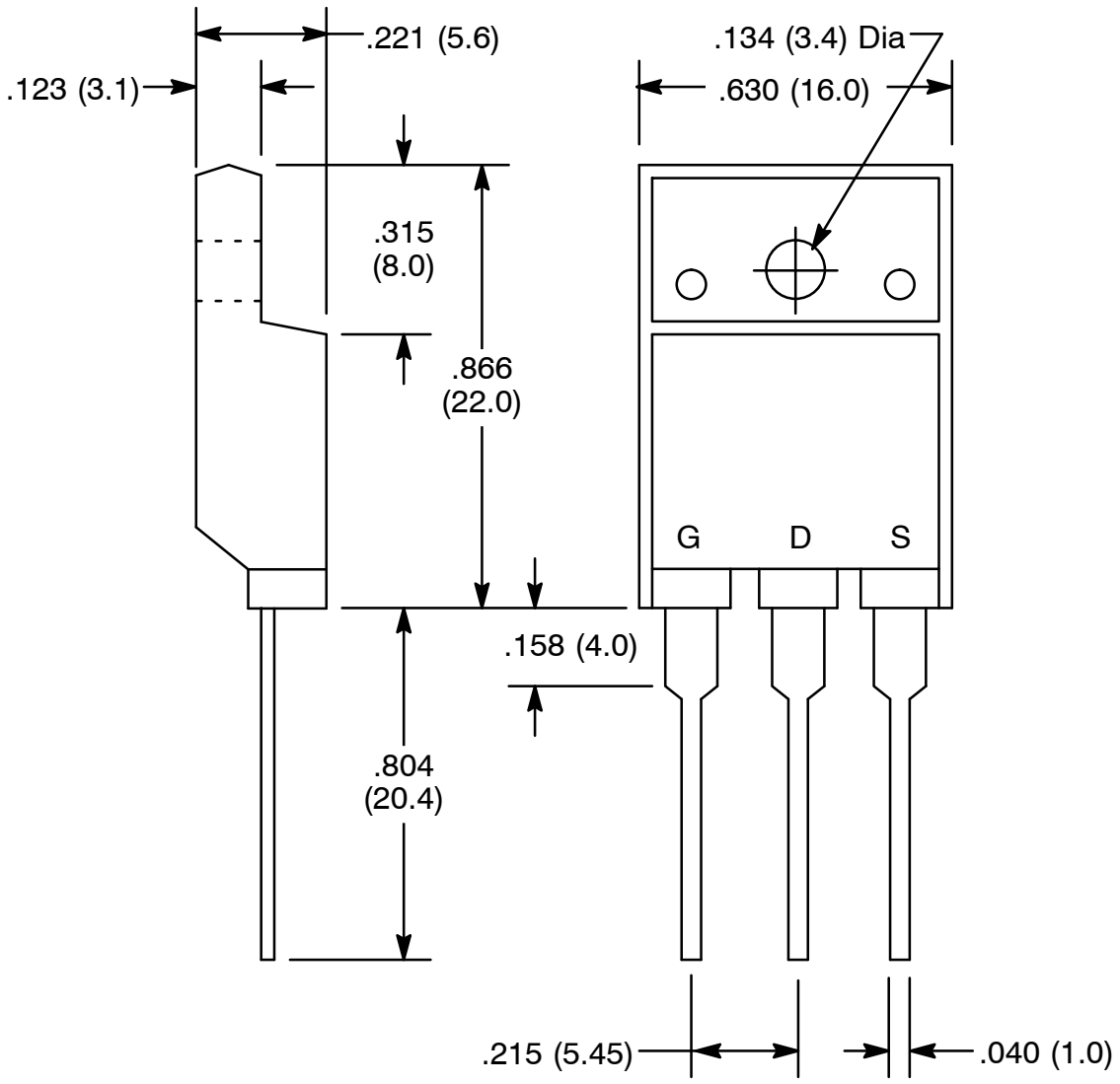
Note 1. Repetitive Rating: Pulse width limited by maximum junction temperature.
Note 2. L = 15mH, I_{AS} = 8A, V_{DD} = 50V, R_G = 27≤, Starting T_J = +25°C.

Note 3. $I_{SD} \leq 10A$, $di/dt \leq 170A/° s$, $V_{DD} \leq V_{(BR)DSS}$, 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 = 250° A	400	–	–	V
Breakdown Voltage Temperature Coefficient	$\pm V_{(BR)DSS}/\pm T_J$	I_D = 250° A	–	0.50	–	V/°C
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = 5V, I_D = 250° A	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
Drain–to–Source Leakage Current	I_{DSS}	V_{DS} = 400V	–	–	10	° A
		V_{DS} = 320V, T_C = +150°C	–	–	100	° A
Static Drain–Source ON Resistance	$R_{DS(on)}$	V_{GS} = 10V, I_D = 4A, Note 4	–	–	0.55	≤
Forward Transconductance	g_{fs}	V_{DS} = 50V, I_D = 4A, Note 4	–	7.05	–	mhos
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 25V, f = 1MHz	–	1180	1530	pF
Output Capacitance	C_{oss}		–	175	205	pF
Reverse Transfer Capacitance	C_{rss}		–	80	95	pF
Turn–On Delay Time	$t_{d(on)}$	V_{DD} = 200V, I_D = 10A, R_G = 9.1≤ , Note 4, Note 5	–	18	50	ns
Rise Time	t_r		–	21	55	ns
Turn–Off Delay Time	$t_{d(off)}$		–	78	170	ns
Fall Time	t_f		–	28	65	ns
Total Gate Charge	Q_g	V_{GS} = 10V, I_D = 10A, V_{DS} = 320V, Note 4, Note 5	–	58	75	nC
Gate–Source Charge	Q_{gs}		–	8.1	–	nC
Gate–Drain (“Miller”) Charge	Q_{gd}		–	31.3	–	nC
Source–Drain Diode Ratings and Characteristics						
Continuous Source Current	I_S	(Body Diode)	–	–	8	A
Pulse Source Current	I_{SM}	(Body Diode) Note 1	–	–	44	A
Diode Forward Voltage	V_{SD}	T_J = +25°C, I_S = 8A, V_{GS} = 0V, Note 4	–	–	1.5	V
Reverse Recovery Time	t_{rr}	T_J = +25°C, I_F = 10A, di_F/dt = 100A/° s, Note 4	–	315	–	ns
Reverse Recovery Charge	Q_{rr}		–	2.84	–	° C

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