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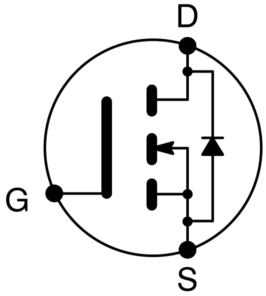
NTE2931
MOSFET
N−Channel, Enhancement Mode
High Speed Switch
TO3PML Type Package

Features:

- Avalanche Rugged Technology
- Rugged Gate Oxide Technology
- Lower Input Capacitance
- Improved Gate Charge
- Extended Safe Operating Area
- Lower R_{DS}(on): 0.144≤ Typ
- Lower Leakage Current: 10° A (Max) @ V_{DS} = 200V



Absolute Maximum Ratings:

Drain−to−Source Voltage, V_{DSS}	200V
Drain Current, I_D	
Continuous	
T_C = +25°C	12.8A
T_C = +100°C	8.1A
Pulsed (Note 1)	80A
Total Power Dissipation (T_C = +25°C), P_D	73W
Derate Above 25°C	0.59W/°C
Gate−Source Voltage, V_{GS}	±30V
Single Pulsed Avalanche Energy (Note 2), E_{AS}	328mJ
Avalanche Current (Note 1), I_{AR}	12.8A
Repetitive Avalanche Energy (Note 1), E_{AR}	7.3mJ
Peak Diode Recovery dv/dt (Note 3), dv/dt	5.0V/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}	1.7°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 = 3mH, I_{AS} = 12.8A, V_{DD} = 50V, R_G = 27≤ , Starting T_J = +25°C.

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Note 3. $I_{SD} \leq 18A$, di/dt ≤ 260A/° s, $V_{DD} \leq V_{(BR)DSS}$, Starting $T_J = +25°C$.

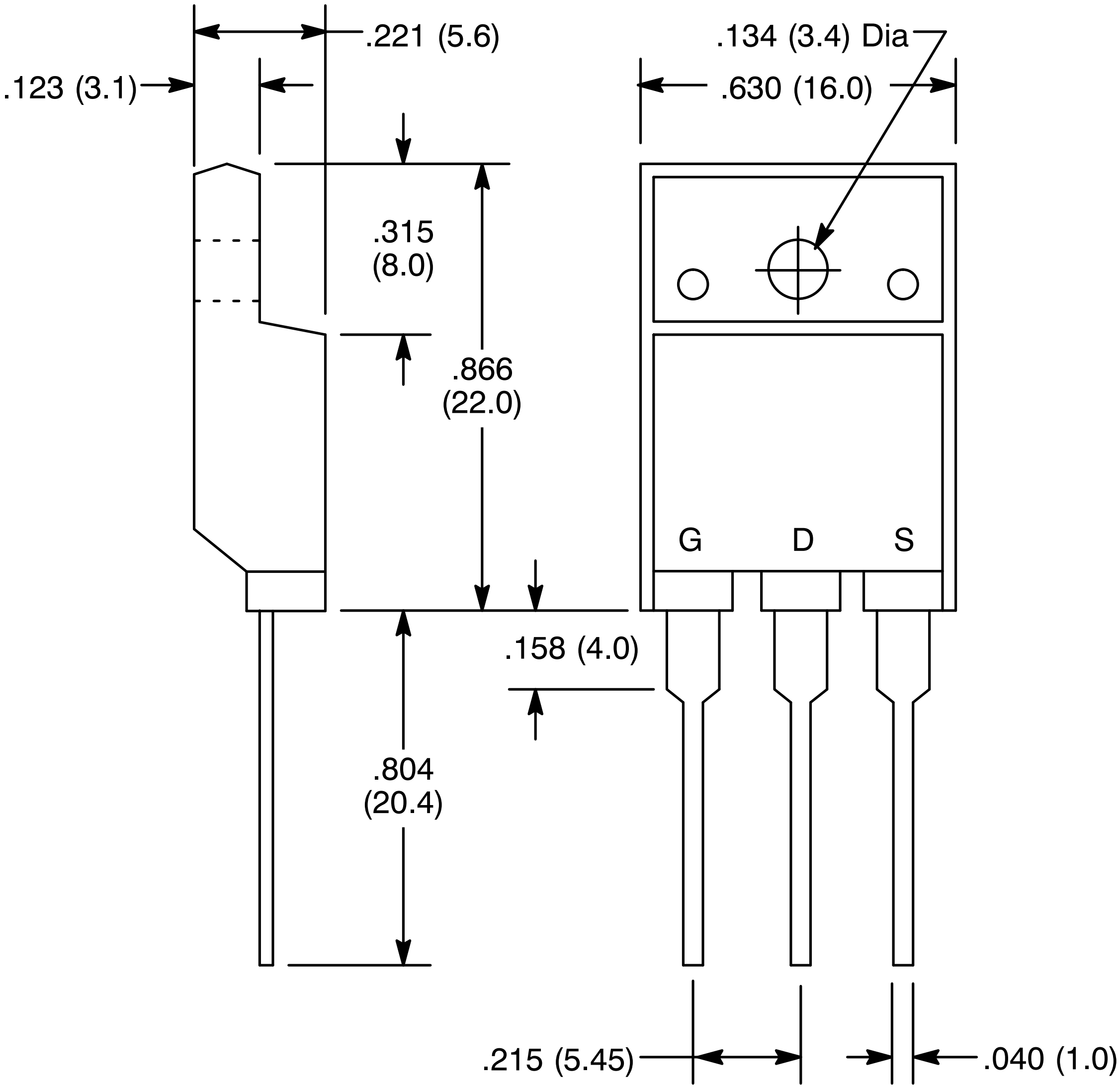
Electrical Characteristics: (T_C = +25°C unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain–Source Breakdown Voltage	BV_{DSS}	V_{GS} = 0V, I_D = 250° A	200	–	–	V
Breakdown Voltage Temperature Coefficient	$\pm V_{(BR)DSS}/\pm T_J$	I_D = 250° A	–	0.26	–	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} = 200V	–	–	10	° A
		V_{DS} = 160V, T_C = +125°C	–	–	100	° A
Static Drain–Source ON Resistance	$R_{DS(on)}$	V_{GS} = 10V, I_D = 6.4A, Note 4	–	–	0.18	≤
Forward Transconductance	g_{fs}	V_{DS} = 40V, I_D = 6.4A, Note 4	–	8.87	–	mhos
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 25V, f = 1MHz	–	1160	1500	pF
Output Capacitance	C_{oss}		–	210	250	pF
Reverse Transfer Capacitance	C_{rss}		–	94	110	pF
Turn–On Delay Time	$t_{d(on)}$	V_{DD} = 100V, I_D = 18A, R_G = 9.1≤ , Note 4, Note 5	–	17	40	ns
Rise Time	t_r		–	16	40	ns
Turn–Off Delay Time	$t_{d(off)}$		–	48	110	ns
Fall Time	t_f		–	24	60	ns
Total Gate Charge	Q_g	V_{GS} = 10V, I_D = 18A, V_{DS} = 160V, Note 4, Note 5	–	44	58	nC
Gate–Source Charge	Q_{gs}		–	10.4	–	nC
Gate–Drain (“Miller”) Charge	Q_{gd}		–	27.1	–	nC
Source–Drain Diode Ratings and Characteristics						
Continuous Source Current	I_S	(Body Diode)	–	–	12.8	A
Pulse Source Current	I_{SM}	(Body Diode) Note 1	–	–	80	A
Diode Forward Voltage	V_{SD}	T_J = +25°C, I_S = 12.8A, V_{GS} = 0V, Note 4	–	–	1.5	V
Reverse Recovery Time	t_{rr}	T_J = +25°C, I_F = 18A, di_F/dt = 100A/° s, Note 4	–	195	–	ns
Reverse Recovery Charge	Q_{rr}		–	1.35	–	° 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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