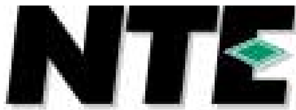
ELECTRONICS, INC.
44 FARRAND STREET
BLOOMFIELD, NJ 07003
(973) 748–5089

NTE2383
MOSFET
P–Channel Enhancement Mode,
High Speed Switch
(Compl to NTE2382)

Description:
The NTE2383 is a MOS power P–Channel FET in a TO220 type package designed for high voltage, high speed power switching applications such as switching regulators, converters, solenoid, and relay drivers.

Features:
- Lower $R_{DS(ON)}$
- Improved Inductive Ruggedness
- Fast Switching Times
- Rugged Polysilicon Gate Cell Structure
- Lower Input Capacitance
- Extended Safe Operating Area
- Improved High Temperature Reliability

Absolute Maximim Ratings:
Drain–Source Voltage (Note 1), V_{DSS} 100V
Drain–Gate Voltage (R_{GS} = 1MΩ, Note 1), V_{DGR} 100V
Gate–Source Voltage, V_{GS} . . . . ±20V
Continuous Drain Current, I_D
T_C = +25°C 10.5A
T_C = +100°C 7.5A
Drain Current, Pulsed (Note 3), I_{DM} 42A
Gate Current, Pulsed, I_{GM} . . . . ±1.5A
Single Pulsed Avalanvhe Energy (Note 4), E_{AS} 510mJ
Avalanche Current, I_{AS} 10.5A
Total Power Dissipation (T_C = +25°C), P_D 75W
Derate Above 25°C . . . . 0.6W/°C
Operating Junction Temperature Range, T_{opr} . . . . –55° to +150°C
Storage Temperature Range, T_{stg} . . . . –55° to +150°C
Thermal Resistance, Junction–to–Ambient, R_{thJA} . . . . 62.5°C/W
Thermal Resistance, Junction–to–Case, R_{thJC} . . . . 1.67°C/W
Thermal Resistance, Case–to–Sink (Note 5), R_{thCS} . . . . 0.5°C/W
Maximum Lead Temperature (During Soldering, 1/8” from case, 5sec), T_L . . . . +300°C

Note 1. T_J = +25° to +150°C
Note 2. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
Note 3. Repetitive rating: Pulse width limited by max. junction temperature.
Note 4. L = 8.5mH, V_{DD} = 25V, R_G = 25Ω, Starting T_J = +25°C.
Note 5. Mounting surface flat, smooth, and greased.

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain–Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0, I_D = 0.25mA	100	–	–	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 100V, V_{GS} = 0	–	–	0.25	mA
		V_{DS} = 80V, V_{GS} = 0, T_J = +125°C	–	–	1.0	mA
Gate–Body Leakage Current, Forward	I_{GSS}	V_{GS} = 20V	–	–	100	nA
Gate–Body Leakage Current, Reverse	I_{GSS}	V_{GS} = 20V	–	–	–100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 0.25mA	2.0	–	4.0	V
Static Drain–Source On–Resistance	$r_{DS(on)}$	V_{GS} = 10V, I_D = 5.3A, Note 2	–	–	0.3	Ω
Forward Transconductance	g_{FS}	$V_{DS} \leq$ 50V, I_D = 5.3A, Note 2	2.0	–	–	mhos
Input Capacitance	C_{iss}	V_{DS} = 25V, V_{GS} = 0, f = 1MHz	–	835	–	pF
Output Capacitance	C_{oss}		–	357	–	pF
Reverse Transfer Capacitance	C_{rss}		–	94	–	pF
Turn–On Delay Time	$t_{d(on)}$	V_{DD} = 50V, I_D = 10.5A, Z_O = 24Ω, MOSFET switching times are essentially independent of operating temperature	–	–	60	ns
Rise Time	t_r		–	–	140	ns
Turn–Off Delay Time	$t_{d(off)}$		–	–	140	ns
Fall Time	t_f		–	–	140	ns
Total Gate Charge	Q_g	V_{GS} = 10V, V_{DS} = 80V, I_D = 10.5A, Gate charge is essentially independent of operating temperature	–	–	58	nC
Gate–Source Charge	Q_{gs}		–	12.6	–	nC
Gate–Drain (“Miller”) Charge	Q_{gd}		–	16.6	–	ns
Source–Drain Diode Ratings and Characteristics						
Continuous Source Current (Body Diode)	I_S		–	–	10.5	A
Pulse Source Current (Body Diode)	I_{SM}	Note 3	–	–	42	A
Diode Forward Voltage	V_{SD}	T_J = +25°C, I_S = 10.5A, V_{GS} = 0V, Note 2	–	–	6.3	V
Reverse Recovery Time	t_{rr}	T_J = +25°C, I_F = 10.5A, dI_F/dt = 100A/µs	–	–	300	ns

Note 2. Pulse Test: Pulse Width ≤ 300µs, Duty Cycle ≤ 2%.
Note 3. Repetitive rating: Pulse width limited by max. junction temperature.

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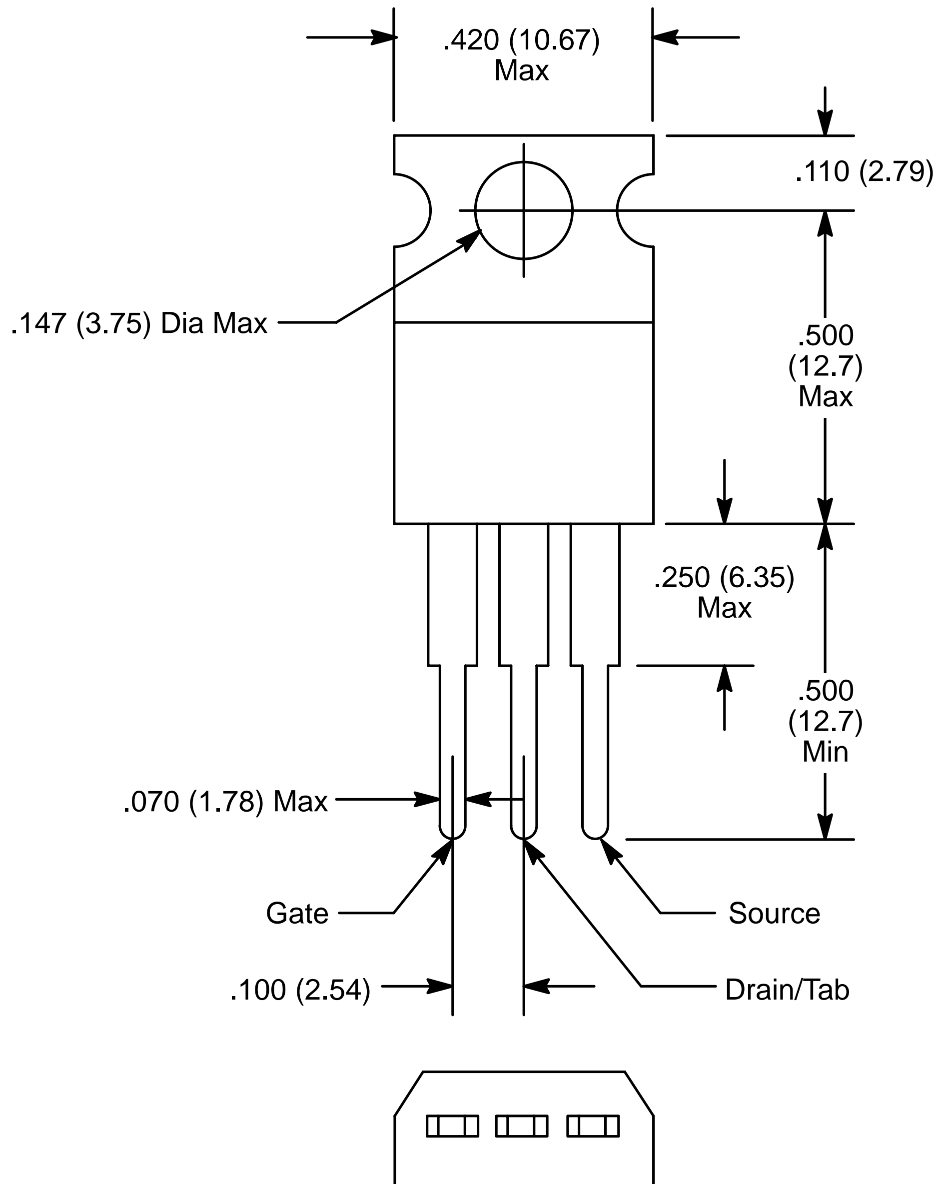

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