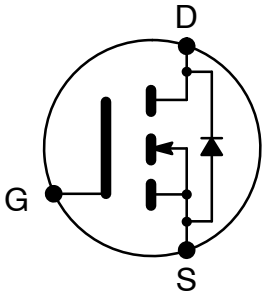
ELECTRONICS, INC.
44 FARRAND STREET
BLOOMFIELD, NJ 07003
(973) 748–5089
http://www.nteinc.com

IRF730
MOSFET
N–Channel, Enhancement Mode
High Speed Switch
TO–220 Type Package



Features:
- Repetitive Avalanche Rated
- Dynamic dv/dt Rating
- Fast Switching
- Simple Drive Requirements
- Ease of Paralleling

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

Drain–Source Voltage, V_{DS} 400V
Gate–Source Voltage, V_{GS} . . . . . ±20V
Continuous Drain Current (V_{GS} = 10V), I_D
  T_C = +25°C 5.5A
  T_C = +100°C 3.5A
Pulsed Drain Current (Note 1), I_{DM} 22A
Maximum Power Dissipation (T_C = +25°C), P_D 74W
  Linear Derating Factor . . . . . 0.59W/°C
Single Pulse Avalanche Energy (Note 2), E_{AS} 290mJ
Avalanche Current (Note 1), I_{AR} 5.5A
Repetitive Avalanche Energy (Note 1), E_{AR} 7.4mJ
Peak Diode Recovery (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
Lead Temperature (During Soldering, .063” (1.6mm) from case, 10sec max), T_L . . . . . +300°C
Thermal Resistance, Junction–to–Ambient, R_{thJA} . . . . . 62°C/W
Typical Thermal Resistance, Case–to–Sink (Flat, Greased Surface), R_{thCS} . . . . . 0.50°C/W
Thermal Resistance, Junction–to–Case (Drain), R_{thJC} . . . . . 1.7°C/W

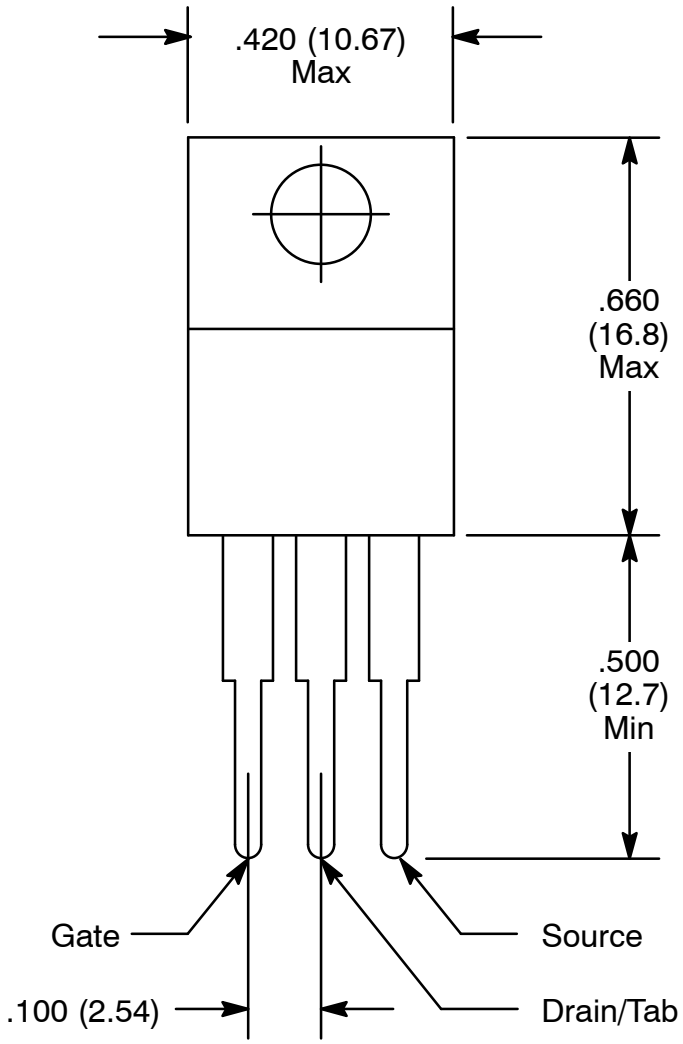
Note 1. Repetitive Rating; Pulse width limited by maximum junction temperature.
Note 2. V_{DD} = 50V, Starting T_J = +25°C, L = 16mH, R_G = 25Ω, I_{AS} = 5.5A.
Note 3. I_{SD} ≤ 5.5A, dI/dt ≤ 90A/μs, V_{DD} ≤ 400V, T_J ≤ +150°C.

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain−Source Breakdown Voltage	$V_{(BR)DSS}$	I_D = 250μA, V_{GS} = 0V	400	–	–	V
Temperature Coefficient of Breakdown Voltage	$\frac{\Delta V_{(BR)DSS}}{\Delta T_J}$	Reference to +25°C, I_D = 1mA	–	0.54	–	V/°C
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	2.0	–	4.0	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 400, V_{GS} = 0V	–	–	25	μA
		V_{DS} = 320, V_{GS} = 0V, T_J = 125°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
Drain−Source On−State Resistance	$R_{DS(on)}$	V_{GS} = 10V, I_D = 3.3A , Note 4	–	–	1.0	Ω
Forward Transconductance	g_{fs}	I_D = 3.3A, V_{DS} = 50V, Note 4	2.9	–	–	S
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 25V, f = 1.0 MHz	–	700	–	pF
Output Capacitance	C_{oss}		–	170	–	pF
Reverse Transfer Capacitance	C_{rss}		–	64	–	pF
Turn−On Time	$t_{d(on)}$	V_{DD} = 200V, I_D = 3.5A, R_G = 12Ω, R_D = 57Ω, Note 4	–	10	–	ns
Rise Time	t_r		–	15	–	ns
Turn−Off Time	$t_{d(off)}$		–	38	–	ns
Fall Time	t_f		–	14	–	ns
Total Gate Charge	Q_g	V_{GS} = 10V, I_D = 3.5A, V_{DS} = 320V, Note 4	–	–	38	nC
Gate−Source Charge	Q_{gs}		–	–	5.7	nC
Gate−Drain (“Miller”) Charge	Q_{gd}		–	–	22	nC
Internal Drain Inductance	$L_S + L_D$	Measured between the contact screw on header that is closer to source and gate pins and center of die.	–	6.1	–	nH
Source−Drain Diode Ratings and Characteristics:						
Continuous Source Current	I_S		–	–	5.5	A
Pulse Source Current	I_{SM}	Note 1	–	–	22	A
Diode Forward Voltage	V_{SD}	T_J = +25°C, I_S = 5.5A, V_{GS} = 0V, Note 4	–	–	1.6	V
Reverse Recovery Time	t_{rr}	T_J = +25°C, I_F = 3.5A, dI/dt ≤100A/μs, Note 4	–	270	530	ns
Reverse Recovered Charge	Q_{RR}		–	1.8	2.2	μc
Forward Turn−on Time	t_{on}	Intrinsic turn−on time is negligible. Turn−on speed is substantially controlled by $L_S + L_D$.				

Note 1. Repetitive Rating; Pulse width limited by maximum junction temperature.

Note 4. Pulse width ≤ 300μs, Duty Cycle 2%.


.420 (10.67)
Max
.660
(16.8)
Max
.500
(12.7)
Min
Gate
Source
.100 (2.54)
Drain/Tab