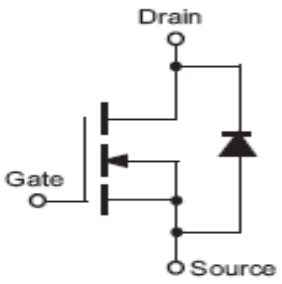
IRF640

N CHANNEL ENHANCEMENT MODE POWER MOS TRANSISTORS

FEATURE

N channel in a plastic TO220 package.
They are intended for use in high speed power switching, low voltage, relay drivers and general purpose switching applications.
DC-DC & DC-AC converters for telecom, industrial and lighting equipment.
Compliance to RoHS.



ABSOLUTE MAXIMUM RATINGS

Symbol	Ratings	Value	Unit
V_{DS}	Drain-Source Voltage	200	V
I_{DS}	Continuous Drain Current T_C= 37°C	18	A
I_{DM}	Pulsed Drain Current T_C= 25°C	72	
I_{AR}	Avalanche Current, Limited by T_{jmax}	18	
E_{AS}	Avalanche Energy, Single pulse I_D = 18 A, V_{DD} = 50 V, T_j = 25°C	280	mJ
E_{AR}	Avalanche Energy, Periodic Limited by T_{jmax}	13	
V_{GS}	Gate-Source Voltage	20	V
$R_{DS(on)}$	Drain-Source on Resistance	0.18	Ω
P_T	Power Dissipation at Case Temperature T_C= 25°C	125	W
t_J	Operating Temperature	150	°C
t_{stg}	Storage Temperature range	-55 to +150	

THERMAL CHARACTERISTICS

Symbol	Ratings	Value	Unit
R_{thJC}	Thermal Resistance, junction-case	1	°C/W
R_{thJA}	Thermal Resistance, junction-ambient	62.5	

IRF640

ELECTRICAL CHARACTERISTICS

TC=25°C unless otherwise noted

Symbol	Ratings	Test Condition(s)	Min	Typ	Max	Unit
V_{DSS}	Drain-Source Breakdown Voltage	I_D= 250 µA, V_{GS}= 0 V	200	-	-	V
$V_{GS(th)}$	Gate-threshold Voltage	I_D= 250 µA, V_{GS}= V_{DS}	2	3	4	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}= 200 V, V_{GS}= 0 V T_j= 25 °C	-	-	25	µA
		V_{DS}= 200 V, V_{GS}= 0 V T_j= 125 °C	-	-	250	
I_{GSS}	Gate-Source leakage Current	V_{GS}= 20 V, V_{DS}= 0 V	-	-	100	nA
$R_{DS(on)}$	Drain-Source on Resistance	I_D= 10 A, V_{GS}= 10 V	-	0.15	0.18	Ω

DYNAMIC CHARACTERISTICS

Symbol	Ratings	Test Condition(s)	Min	Typ	Max	Unit
g_{fs}	Transconductance	V_{DS} = 2*I_D*$R_{DS(on)max}$ I_D= 9 A	7	11	-	S
C_{ISS}	Input Capacitance	V_{GS}= 0 V, V_{DS}= 25 V f= 1MHz	-	1200	1560	pF
C_{OSS}	Output Capacitance		-	200	260	
C_{RSS}	Reverse transfer Capacitance		-	60	80	
$t_{d(on)}$	Turn-on Delay Time	V_{DD}= 100 V, I_D= 18 A, R_{GS}= 25 Ω	-	20	50	ns
t_r	Rise time		-	145	300	
$t_{d(off)}$	Turn-off Delay Time		-	145	300	
t_f	Fall Time		-	110	230	

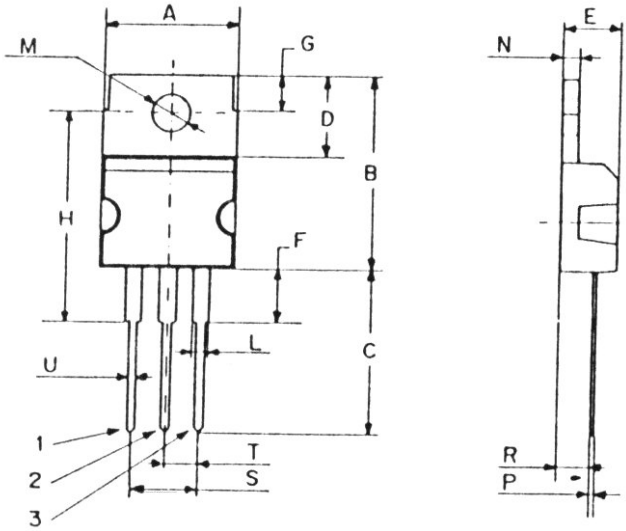
REVERSE DIODE

Symbol	Ratings	Test Condition(s)	Min	Typ	Max	Unit
I_S	Inverse Diode Continuous Forward Current.	T_C = 25°C	-	-	18	A
I_{SM}	Inverse diode direct current, pulsed.	T_C = 25°C	-	-	72	
V_{SD}	Inverse Diode Forward voltage	V_{GS} = 0 V, I_F = 18 A	-	-	2	V
T_{rr}	Reverse Recovery Time	V_R = 25 V, I_F = 18 A di/dt = 100 A/µs, T_C = 150°C	-	130	-	ns
Q_{rr}	Reverse Recovery Charge		-	0.8	-	µC

IRF640

MECHANICAL DATA CASE TO-220

DIMENSIONS (mm)		
	Min.	Max.
A	9,90	10,30
B	15,65	15,90
C	13,20	13,40
D	6,45	6,65
E	4,30	4,50
F	2,70	3,15
G	2,60	3,00
H	15,75	17.15
L	1,15	1,40
M	3,50	3,70
N	-	1,37
P	0,46	0,55
R	2,50	2,70
S	4,98	5,08
T	2.49	2.54
U	0,70	0,90



Pin 1 :	Gate
Pin 2 :	Drain
Pin 3 :	Source

Revised August 2012