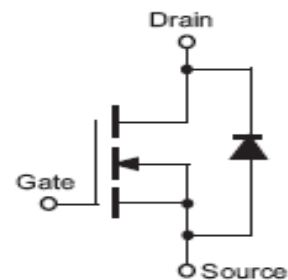


## IRF640

### 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 $T_C= 37^\circ\text{C}$	18	A
$I_{DM}$	Pulsed Drain Current $T_C= 25^\circ\text{C}$	72	
$I_{AR}$	Avalanche Current, Limited by $T_{jmax}$	18	
$E_{AS}$	Avalanche Energy, Single pulse $I_D = 18\text{ A}, V_{DD} = 50\text{ V}, T_j = 25^\circ\text{C}$	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	$\Omega$
$P_T$	Power Dissipation at Case Temperature $T_C= 25^\circ\text{C}$	125	W
$t_J$	Operating Temperature	150	$^\circ\text{C}$
$t_{stg}$	Storage Temperature range	-55 to +150	

#### THERMAL CHARACTERISTICS

Symbol	Ratings	Value	Unit
$R_{thJC}$	Thermal Resistance, junction-case	1	$^\circ\text{C/W}$
$R_{thJA}$	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	$I_D = 250 \mu A, V_{GS} = 0 V$	200	-	-	V
$V_{GS(th)}$	Gate-threshold Voltage	$I_D = 250 \mu A, V_{GS} = V_{DS}$	2	3	4	V
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{DS} = 200 V, V_{GS} = 0 V$ $T_j = 25^\circ C$	-	-	25	$\mu A$
		$V_{DS} = 200 V, V_{GS} = 0 V$ $T_j = 125^\circ C$	-	-	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	$\Omega$

### DYNAMIC CHARACTERISTICS

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

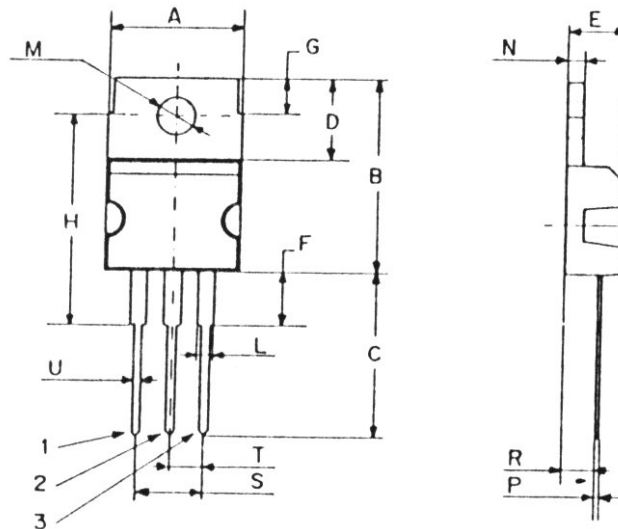
### REVERSE DIODE

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

# 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

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