GOODWORK

IRF640

MOSFET(N-Channel)

DESCRIPTION

Third Generation HEXFETs from internation Rectifier provide the designer with the best combination of fast switching ,ruggedized device design,low on-resistance cost effectiveness.

The TO-220-3L package is universally preferred for all commercial-industrial applications at power dissipation levels to approximately 50 watts. The low thermal resistance and low package cost of the TO-220 -3L contribute to its wide acceptance throughout the industry.

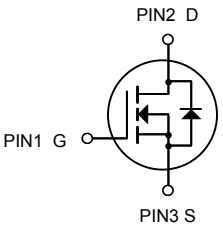
FEATURE

Repetitive Avalanche Rated

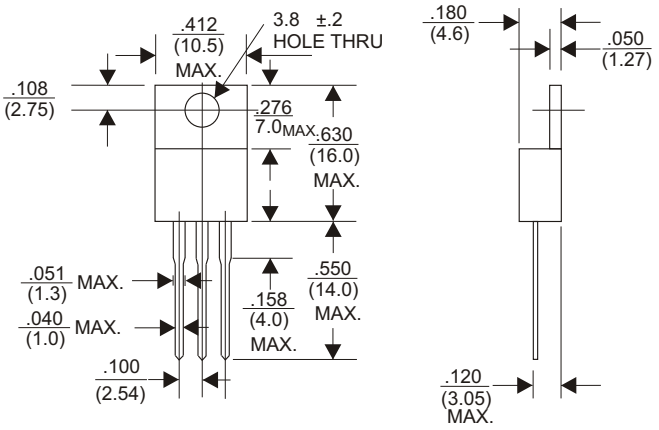
Fast Switching

Ease of Paralleling

Simple Drive Requirement



TO-220AB



Dimensions in inches and (millimeters)

MAXIMUM RATINGS(T_a=25℃ unless otherwise noted)

Symbol	Parameter	Value	Units
I_D	Continuous Drain Current, V_{GS} @ 10 V	18	A
P_D	Power Dissipation	2	W
	Linear Derating Factor	1.0	W/℃
V_{GS}	Gate-Souse Voltage	±20	V
E_{AS}	Single Pulse Avalanche Energy (note 1)	580	mJ
$R_{\theta JA}$	Thermal Resistance from Junction to Ambient	62.5	℃/W
T_J	Junction Temperature	150	℃
T_{STG}	Storage Temperature	-55~+150	℃

IRF640

ELECTRICAL CHARACTERISTICS (T_a=25℃ unless otherwise specified)

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS}=0V,I_D=250μA	200			V
Gate-threshold voltage	$V_{(GS)th}$	V_{DS}=V_{GS}, I_D=250μA	2		4	
Gate-body leakage	I_{GSS}	V_{DS}=0V, V_{GS}=±20V			±100	nA
Zero gate voltage drain current	I_{DSS}	V_{DS}=200V, V_{GS}=0V			25	μA
Drain-source on-resistance (note 2)	$R_{DS(on)}$	V_{GS}=10V, I_D=11A		0.125	0.18	Ω
Forward transconductance (note 2)	g_{fs}	V_{DS}=50V, I_D=11A	6.7			S
Diode forward voltage (note 2)	V_{SD}	I_S=18A, V_{GS}=0V			2	V
Input capacitance (note 3)	C_{iss}	V_{DS}=25V, V_{GS}=0V,f=1MHz		1300		pF
Output capacitance (note 3)	C_{oss}			400		
Reverse transfer capacitance (note 3)	C_{rss}			120		
Turn-on time(note 2,3)	$t_{d(on)}$	V_{DD}=100V,R_D=5.4Ω, I_D=18A, R_G=9.1Ω		14		ns
Rise time	t_r			51		
Turn-off time (note 2,3)	$t_{d(off)}$			45		
Fall time (note 2,3)	t_f			36		

Notes:

1. V_{DD}=50V,starting T_J=25℃，L=2.7mH,R_G=25Ω，I_{AS}=18A.
2. Pulse test: Pulse width≤300μs, duty cycle≤2%.
3. These parameters have no way to verify.

RATING AND CHARACTERISTIC CURVES (IRF640)

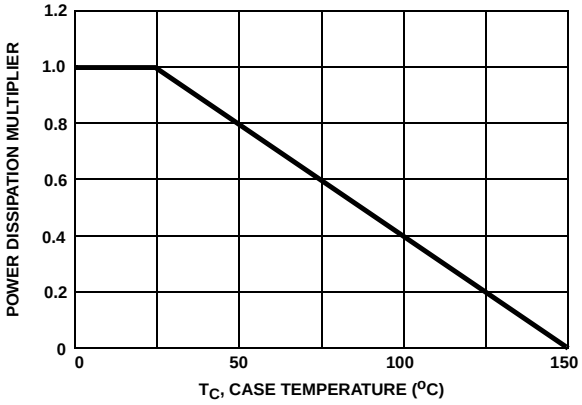


FIGURE 1. NORMALIZED POWER DISSIPATION vs CASE TEMPERATURE

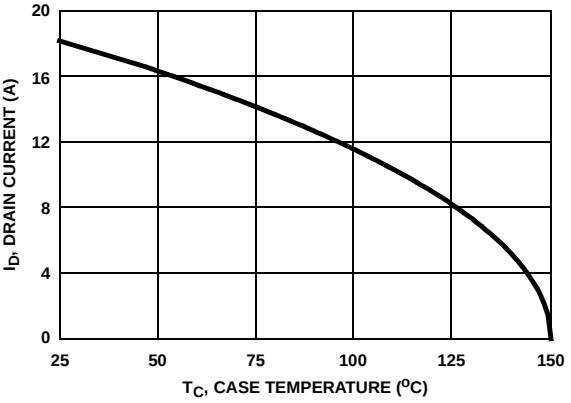


FIGURE 2. MAXIMUM CONTINUOUS DRAIN CURRENT vs CASE TEMPERATURE

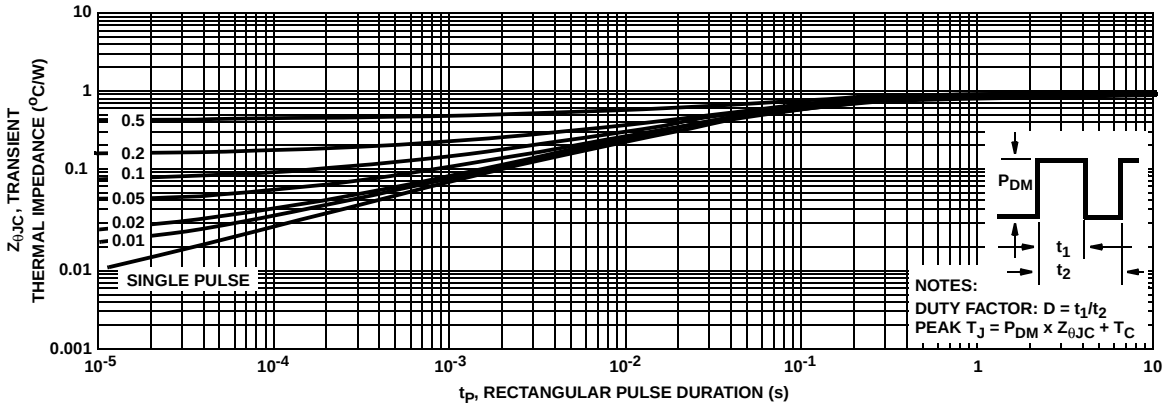


FIGURE 3. MAXIMUM TRANSIENT THERMAL IMPEDANCE

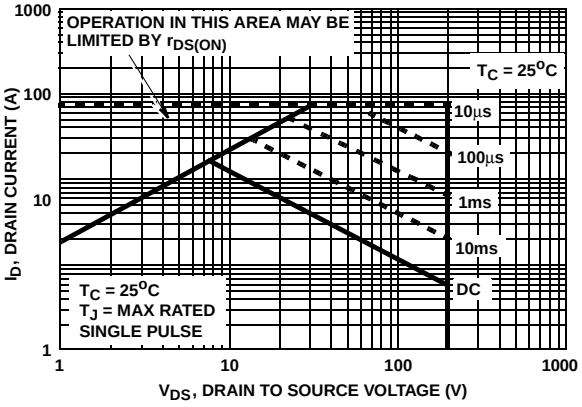


FIGURE 4. FORWARD BIAS SAFE OPERATING AREA

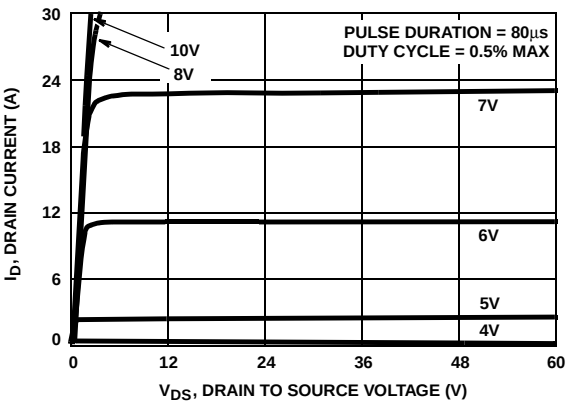


FIGURE 5. OUTPUT CHARACTERISTICS

RATING AND CHARACTERISTIC CURVES (IRF640)

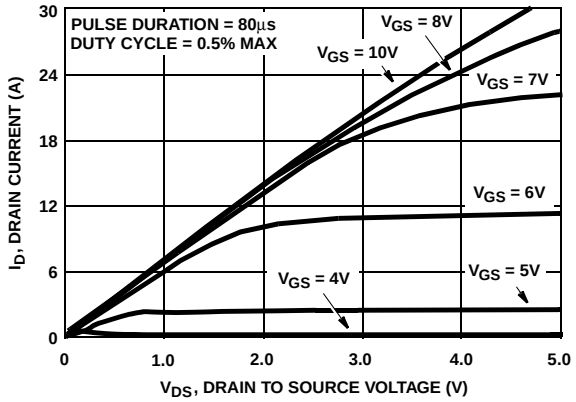


FIGURE 6. SATURATION CHARACTERISTICS

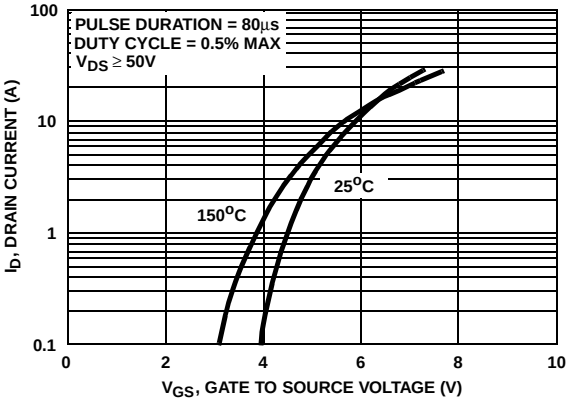


FIGURE 7. TRANSFER CHARACTERISTICS

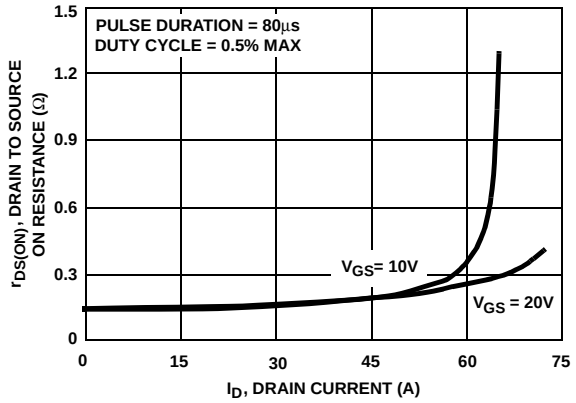


FIGURE 8. DRAIN TO SOURCE ON RESISTANCE vs GATE VOLTAGE AND DRAIN CURRENT

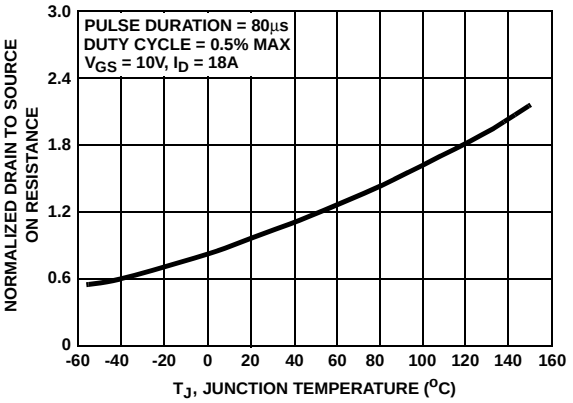


FIGURE 9. NORMALIZED DRAIN TO SOURCE ON RESISTANCE vs JUNCTION TEMPERATURE

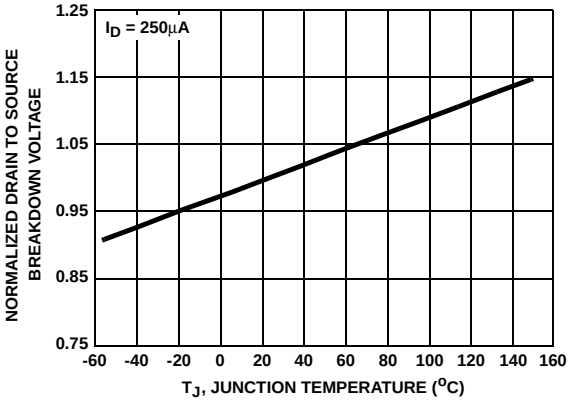


FIGURE 10. NORMALIZED DRAIN TO SOURCE BREAKDOWN VOLTAGE vs JUNCTION TEMPERATURE

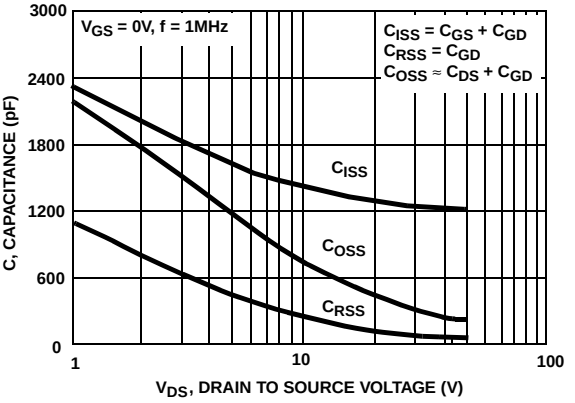


FIGURE 11. CAPACITANCE vs DRAIN TO SOURCE VOLTAGE

RATING AND CHARACTERISTIC CURVES (IRF640)

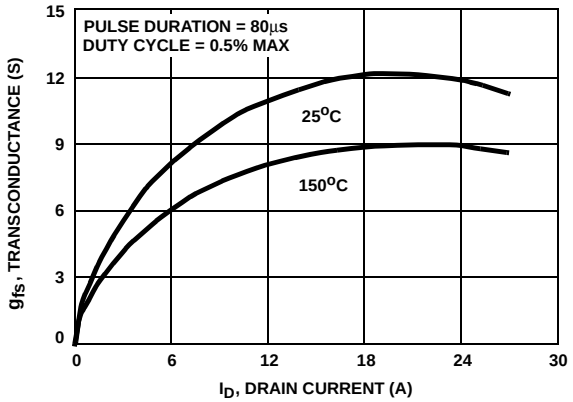


FIGURE 12. TRANSCONDUCTANCE vs DRAIN CURRENT

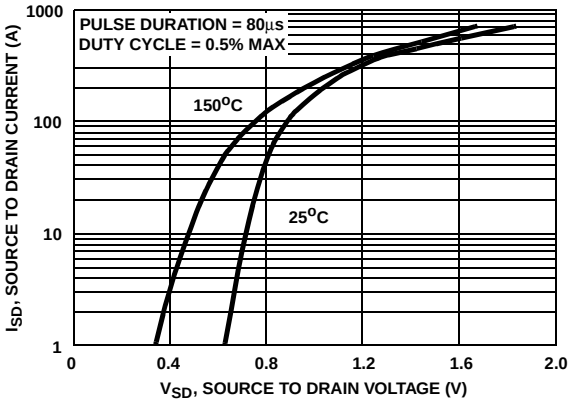


FIGURE 13. SOURCE TO DRAIN DIODE VOLTAGE

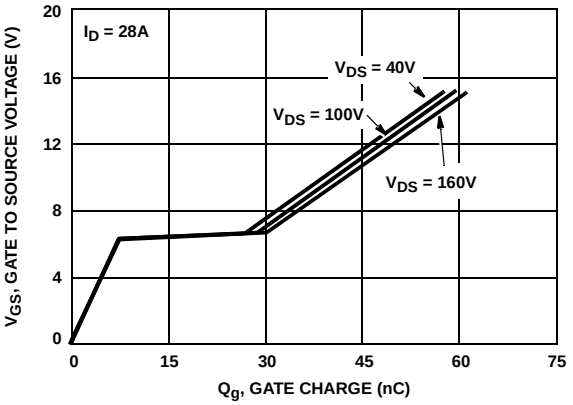


FIGURE 14. GATE TO SOURCE VOLTAGE vs GATE CHARGE