



JIANGSU CHANGJIANG ELECTRONICS TECHNOLOGY CO., LTD

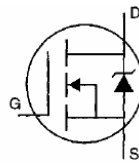
TO-220AB Plastic-Encapsulate MOSFET

IRF640

MOSFET(N-Channel)

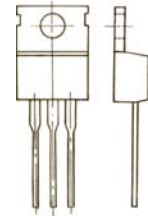
FEATURES

- 18A, 200V
- $R_{DS(ON)}=0.180\ \Omega$
- Single Pulse Avalanche Energy Rated
- SOA is Power Dissipation Limited
- Nanosecond Switching Speed
- Linear Transfer Characteristics
- High Input Impedance
- Related Literatur



TO-220

1. GATE
2. DRAIN
3. SOURCE



MAXIMUM RATINGS* $T_A=25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Value	Units
I_D @ $T_C=25^\circ\text{C}$	Continuous Drain Current, V_{GS} @ 10 V	18	A
I_D @ $T_C=100^\circ\text{C}$	Continuous Drain Current, V_{GS} @ 10 V	11	A
I_{DM}	Pulsed Drain Current	72	A
P_D @ $T_C=25^\circ\text{C}$	Power Dissipation	125	W
	Linear Derating Factor	1.0	W/ $^\circ\text{C}$
V_{GS}	Gate-Source Voltage	± 20	V
E_{AS}	Single Pulse Avalanche Energy	580	mJ
I_{AR}	Avalanche Current	18	A
T_J, T_{stg}	Junction and Storage Temperature	-55-150	$^\circ\text{C}$

Thermal Resistance

$R_{\theta JC}$	Thermal Resistance Junction to Case	1	$^\circ\text{C/W}$
$R_{\theta JA}$	Thermal Resistance Junction to Ambient	62	$^\circ\text{C/W}$

ELECTRICAL CHARACTERISTICS (Tamb=25°C unless otherwise specified)

Parameter	Symbol	Test conditions	MIN	TYP	MAX	UNIT
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\ \mu A$	200			V
Gate-Threshold Voltage	$V_{th(GS)}$	$V_{DS}=V_{GS}, I_D=250\ \mu A$	2		4	
Gate-body Leakage	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 20V$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=200V, V_{GS}=0V$			25	μA
		$V_{DS}=160V, V_{GS}=0V, T_J=125^\circ C$			250	
Drain-Source On-Resistance	$r_{DS(on)}$	$V_{GS}=10V, I_D=11A$			0.18	Ω
Forward Transconductance	g_{ts}	$V_{DS}=50V, I_D=11A$	6.7			s
Diode Forward Voltage	V_{SD}	$I_S=18A, V_{GS}=0$			2	V
Input Capacitance	C_{iss}	$V_{DS}=25V, V_{GS}=0V, f=1MHz$		1300		pF
Output Capacitance	C_{OSS}			430		
Reverse Transfer Capacitance	C_{rSS}			130		

SWITCHING TIME

Turn-on Time	$t_{d(on)}$	$V_{DD}=100V, R_L=5.4\ \Omega$			21	ns
	t_r				77	
Turn-off Time	$t_{d(off)}$	$I_D=18A, R_{GS}=9.1\ \Omega$			68	

Typical Characteristics

IRF640

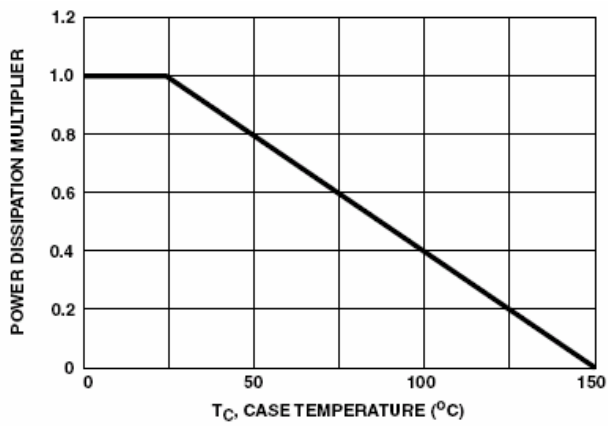


FIGURE 1. NORMALIZED POWER DISSIPATION vs CASE TEMPERATURE

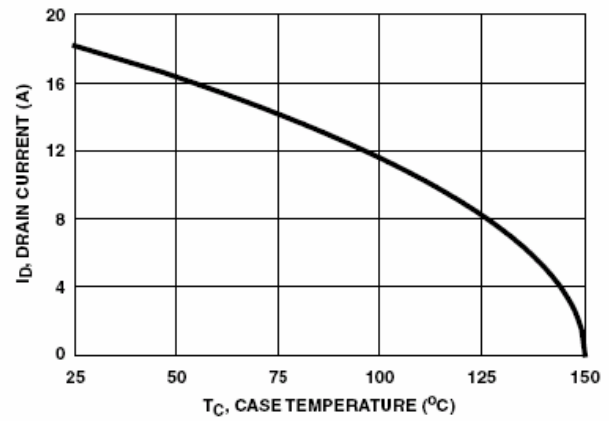


FIGURE 2. MAXIMUM CONTINUOUS DRAIN CURRENT vs CASE TEMPERATURE

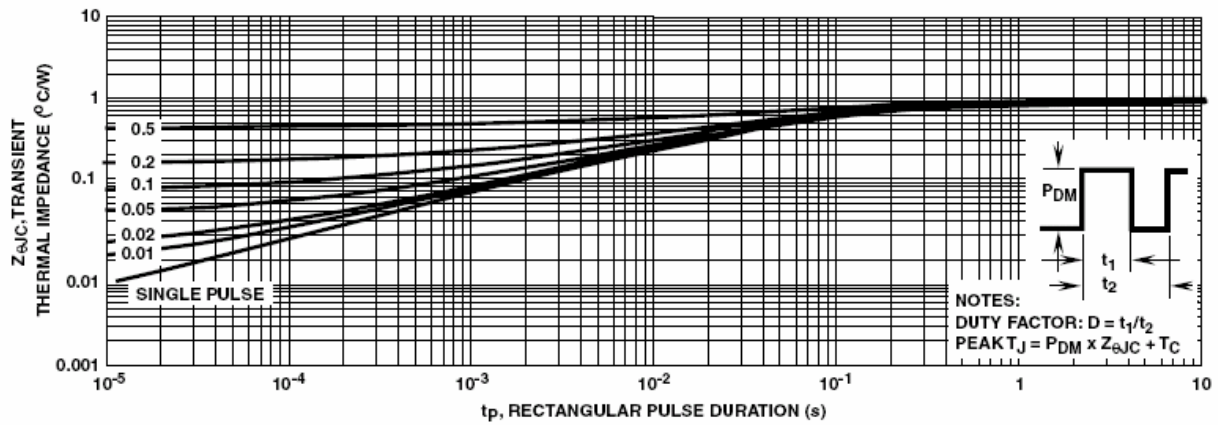


FIGURE 3. MAXIMUM TRANSIENT THERMAL IMPEDANCE

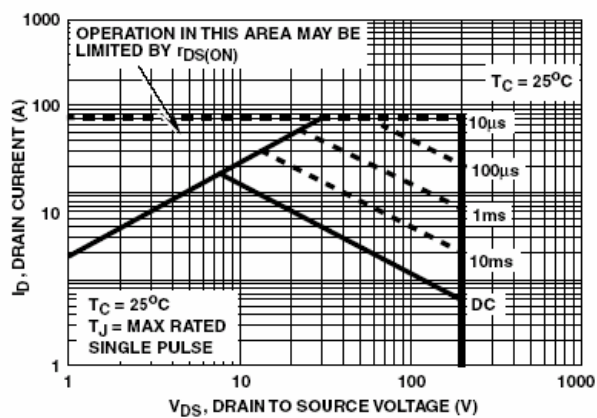


FIGURE 4. FORWARD BIAS SAFE OPERATING AREA

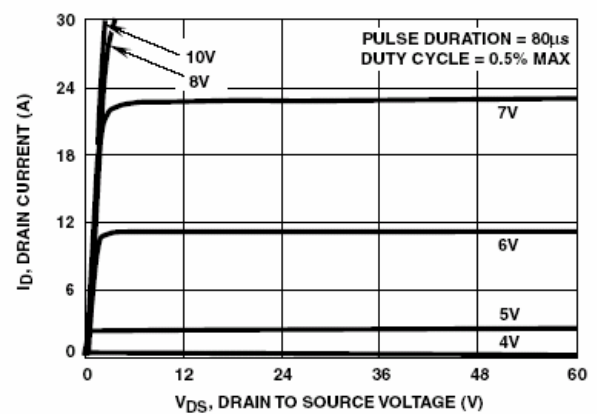


FIGURE 5. OUTPUT CHARACTERISTICS

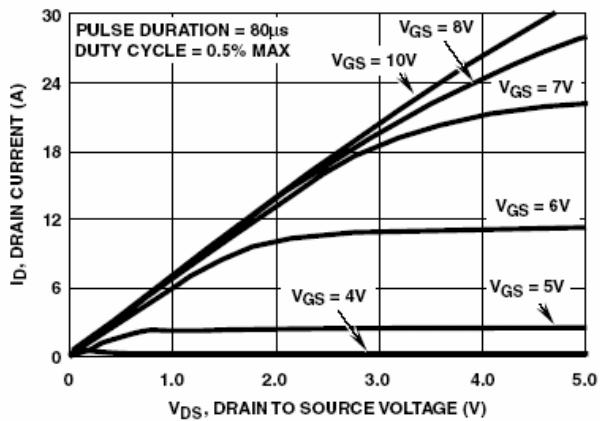


FIGURE 6. SATURATION CHARACTERISTICS

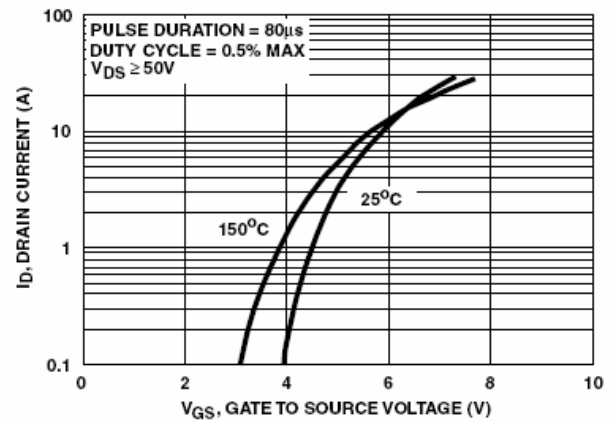


FIGURE 7. TRANSFER CHARACTERISTICS

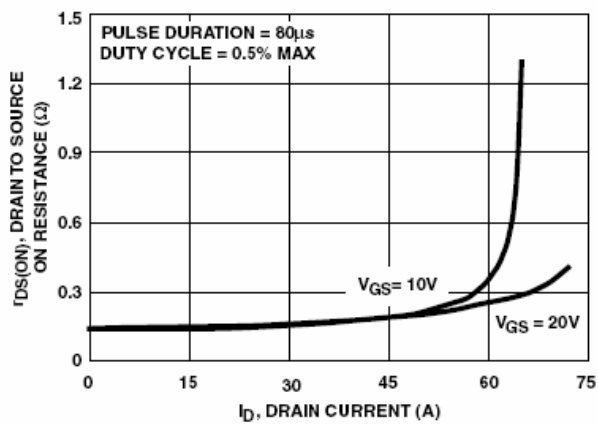


FIGURE 8. DRAIN TO SOURCE ON RESISTANCE vs GATE VOLTAGE AND DRAIN CURRENT

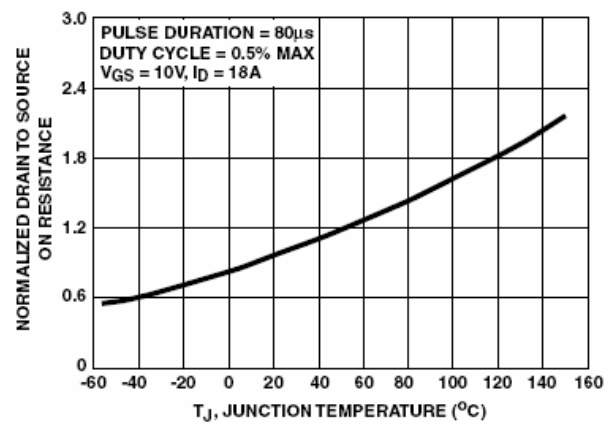


FIGURE 9. NORMALIZED DRAIN TO SOURCE ON RESISTANCE vs JUNCTION TEMPERATURE

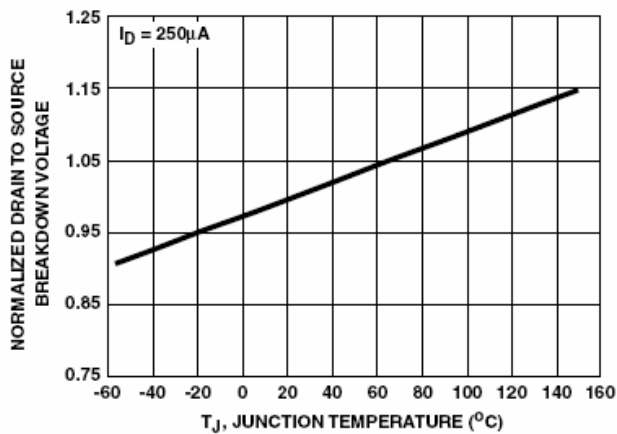


FIGURE 10. NORMALIZED DRAIN TO SOURCE BREAKDOWN VOLTAGE vs JUNCTION TEMPERATURE

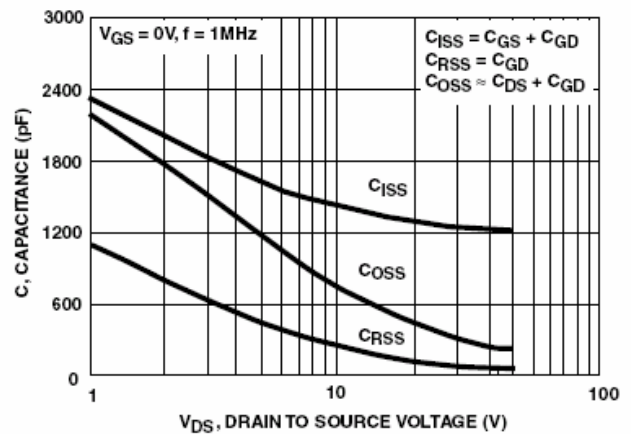


FIGURE 11. CAPACITANCE vs DRAIN TO SOURCE VOLTAGE

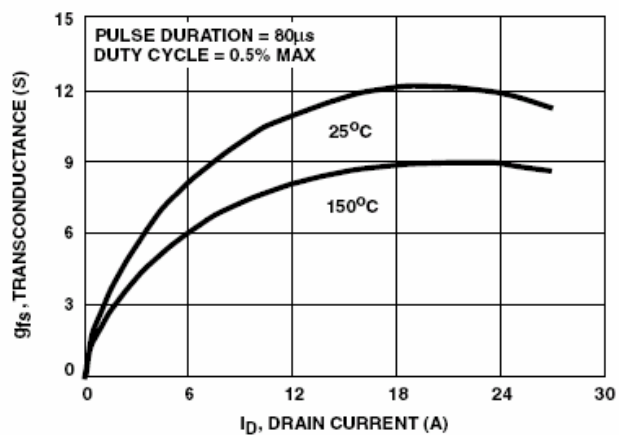


FIGURE 12. TRANSCONDUCTANCE vs DRAIN CURRENT

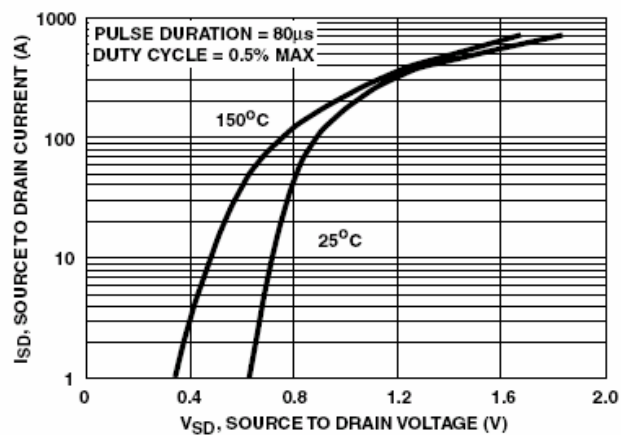


FIGURE 13. SOURCE TO DRAIN DIODE VOLTAGE

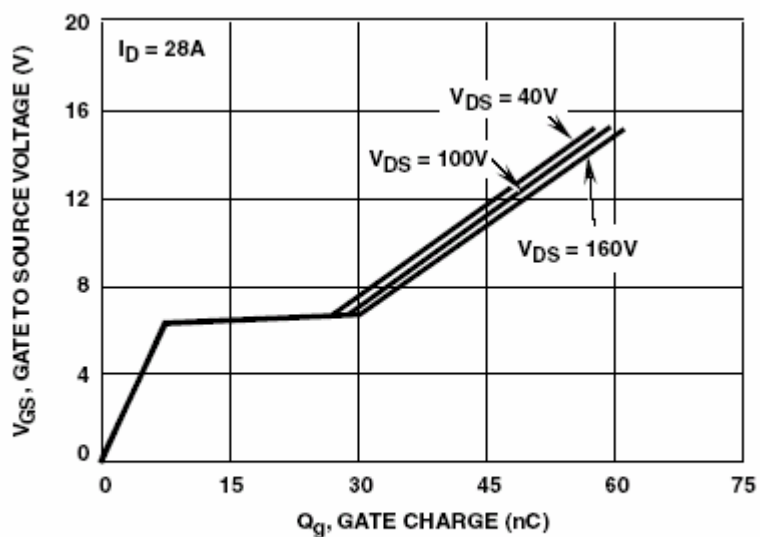


FIGURE 14. GATE TO SOURCE VOLTAGE vs GATE CHARGE