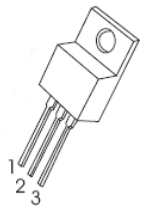
JIANGSU CHANGJIANG ELECTRONICS TECHNOLOGY CO., LTD

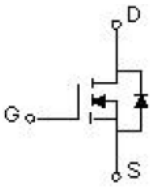
TO-220-3L Plastic-Encapsulate MOSFETS

IRF840 MOSFET(N-Channel)

TO-220-3L



1. GATE
2. DRAIN
3. SOURCE



FEATURES

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

Description

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

The TO-220 package is universally preferred for all commercial-industrial applications. The low thermal resistance and low package cost of the TO-220 contribute to its wide acceptance throughout the industry.

MAXIMUM RATINGS(T_a=25℃ unless otherwise noted)

Symbol	Parameter	Value	Units
I_D	Continuous Drain Current, V_{GS} @ 10 V T_C=25℃	8	A
	T_C=100℃	5.1	A
I_{DM}	Pulsed Drain Current (note 1)	32	A
P_D	Power Dissipation	2	W
V_{GS}	Gate-Souse Voltage	±20	V
E_{AS}	Single Pulse Avalanche Energy (note 2)	510	mJ
I_{AR}	Avalanche Current (note 1)	8	A
E_{AR}	Repetitive Avalanche Energy (note 1)	13	mJ
dv/dt	Peak Diode Recovery dv/dt (note 3)	3.5	V/ns
$R_{\theta JA}$	Thermal Resistance from Junction to Ambient	62.5	℃/W
T_J	Junction Temperature	150	℃
T_{STG}	Storage Temperature	-55~+150	℃

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	500			V
Gate-threshold voltage	$V_{th(GS)}$	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}=500V, V_{GS}=0V			25	μA
Drain-source on-resistance	$R_{DS(0n)}$)	V_{GS}=10V, I_D=4.8A			0.85	Ω
Forward transconductance	g_{fs}	V_{DS}=50V, I_D=4.8A	4.9			S
Diode forward voltage	V_{SD}	I_S=8A, V_{GS}=0V			2	V
Total gate charge	Q_g	V_{DS}=400V, V_{GS}=10V,I_D=8A			63	nC
Gate-source charge	Q_{gs}				9.3	
Gate-drain charge	Q_{gd}				32	
Input capacitance	C_{iss}	V_{DS}=25V, V_{GS}=0V,f=1MHz		1300		pF
Output capacitance	C_{oss}			310		
Reverse transfer capacitance	C_{rss}			120		
Turn-on time	$t_{d(0n)}$	V_{DD}=250V,R_D=31Ω, I_D=8A, R_G=9.1Ω		14		ns
Rise time	t_r			23		
Turn-off time	$t_{d(off)}$			49		
Fall time	t_f			20		

Notes:

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

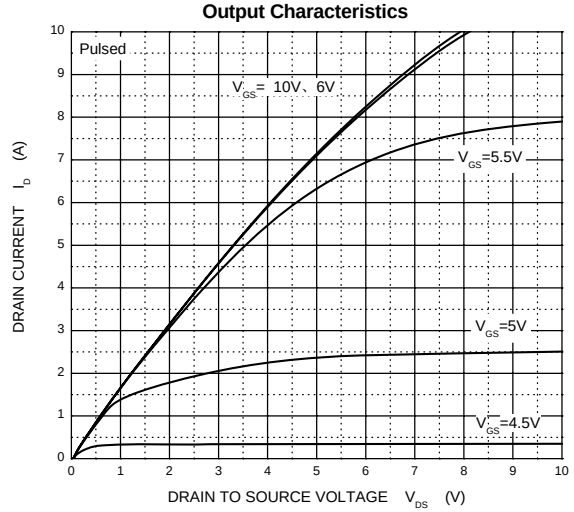
2.L=14mH, I_{AS} =8.0A, V_{DD}=50V, R_G=25Ω, starting T_J = 25℃

3.I_{SD}≤8.0A, di/dt≤100A/μs, V_{DD}≤$V_{(BR)DSS}$, T_J≤150℃

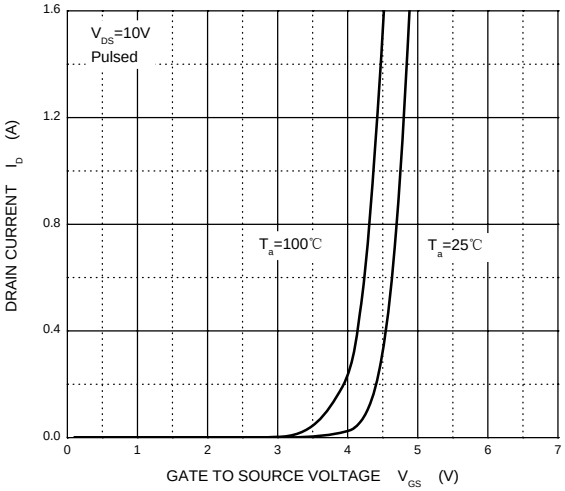
4. Pulse width ≤300μs, Duty cycle≤2%

Typical Characteristics IRF840

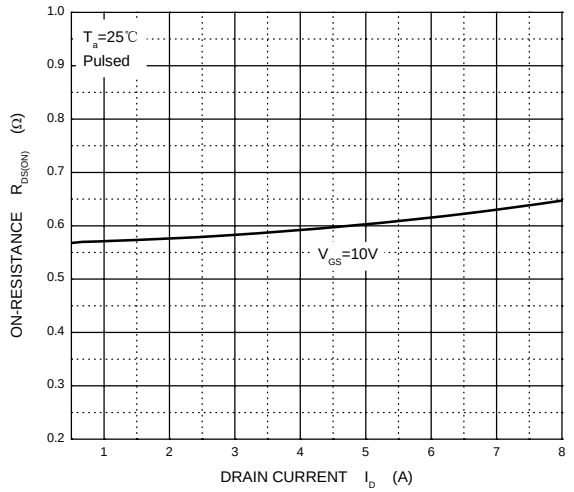
Output Characteristics



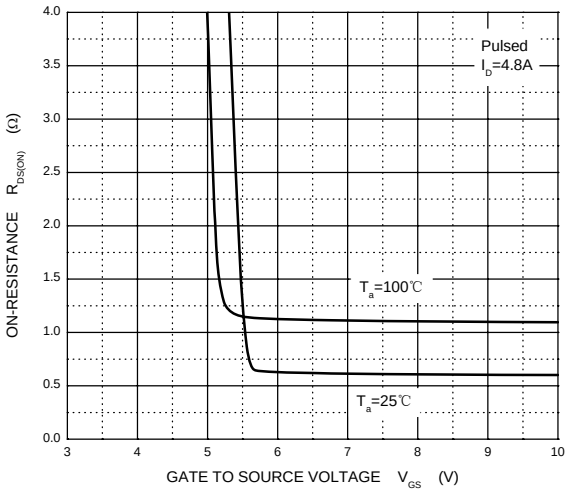
Transfer Characteristics



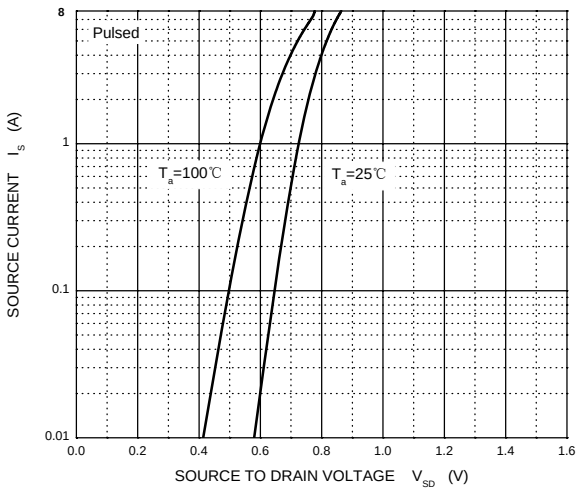
$R_{DS(ON)}$ —— I_D



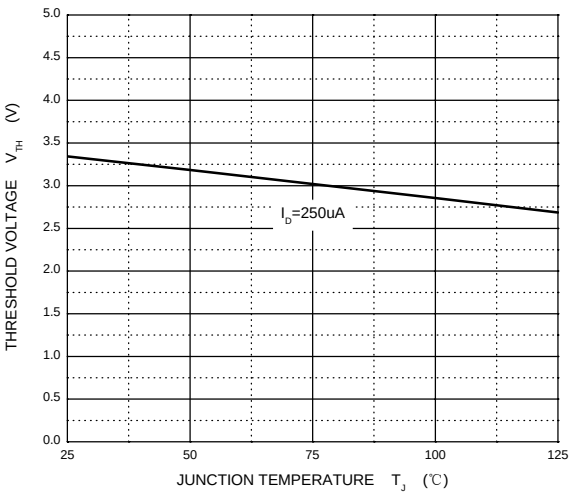
$R_{DS(ON)}$—— V_{GS}



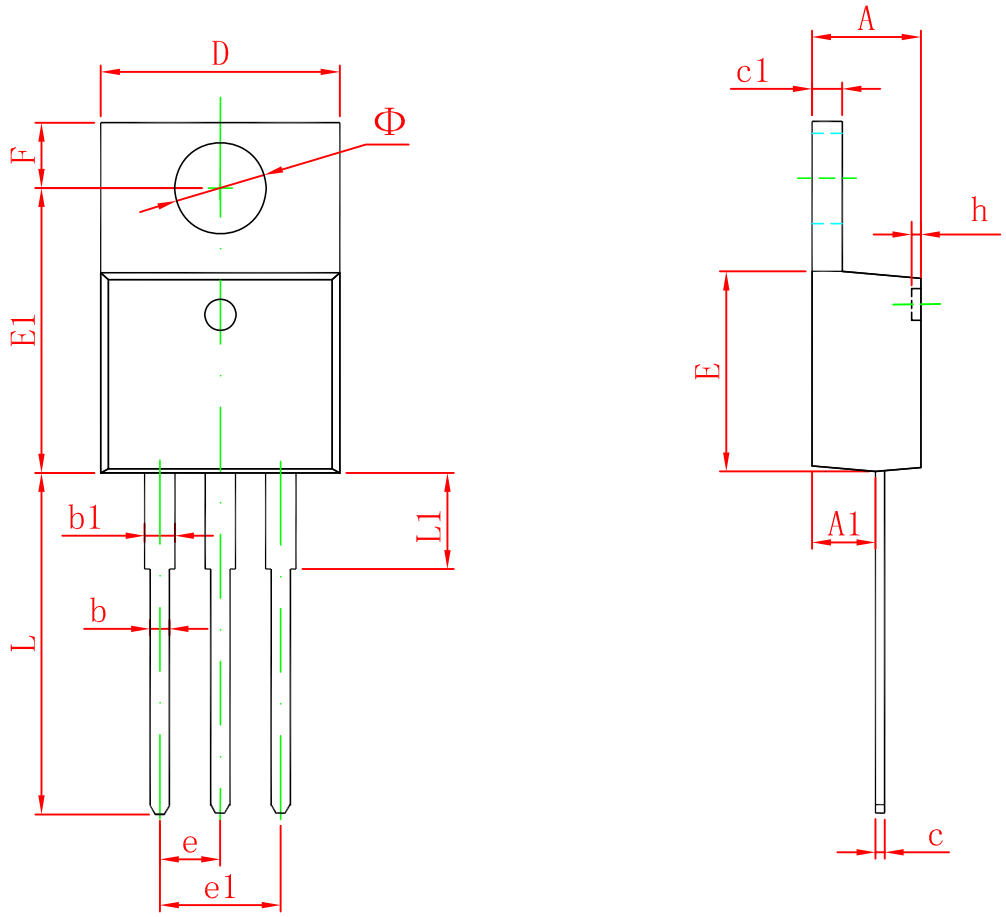
I_S —— V_{SD}



Threshold Voltage



TO-220-3L Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	4.470	4.670	0.176	0.184
A1	2.520	2.820	0.099	0.111
b	0.710	0.910	0.028	0.036
b1	1.170	1.370	0.046	0.054
c	0.310	0.530	0.012	0.021
c1	1.170	1.370	0.046	0.054
D	10.010	10.310	0.394	0.406
E	8.500	8.900	0.335	0.350
E1	12.060	12.460	0.475	0.491
e	2.540 TYP		0.100 TYP	
e1	4.980	5.180	0.196	0.204
F	2.590	2.890	0.102	0.114
h	0.000	0.300	0.000	0.012
L	13.400	13.800	0.528	0.543
L1	3.560	3.960	0.140	0.156
Φ	3.735	3.935	0.147	0.155