

## TO-220!' @Plastic-Encapsulate MOSFETS

### IRF840 MOSFET( N-Channel )

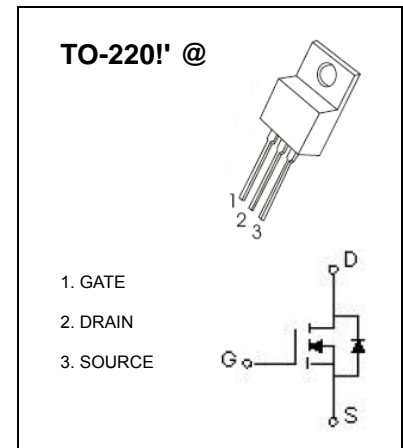
#### FEATURES

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

#### Description

Third Generation HEXFETs from international 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( $T_a=25^{\circ}\text{C}$ unless otherwise noted )

Symbol	Parameter	Value	Units
$I_D$	Continuous Drain Current, $V_{GS}$ @ 10 V $T_C=25^{\circ}\text{C}$ $T_C=100^{\circ}\text{C}$	8	A
		5.1	A
$I_{DM}$	Pulsed Drain Current (note 1 )	32	A
$P_D$	Power Dissipation	2	W
$V_{GS}$	Gate-Source Voltage	$\pm 20$	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	$^{\circ}\text{C}/\text{W}$
$T_J$	Junction Temperature	150	$^{\circ}\text{C}$
$T_{STG}$	Storage Temperature	-55~+150	$^{\circ}\text{C}$

**ELECTRICAL CHARACTERISTICS (T<sub>a</sub>=25°C unless otherwise specified)**

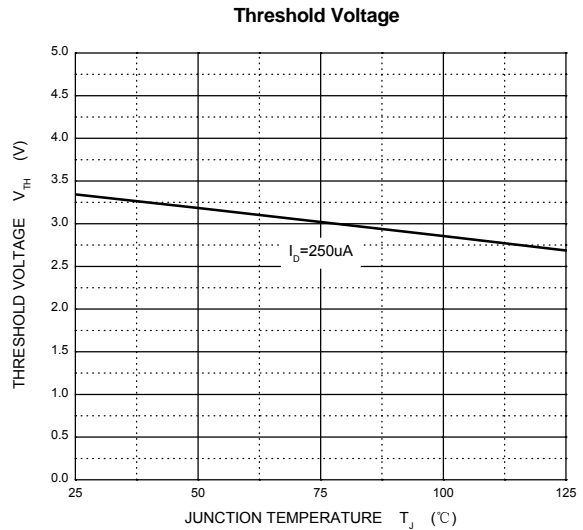
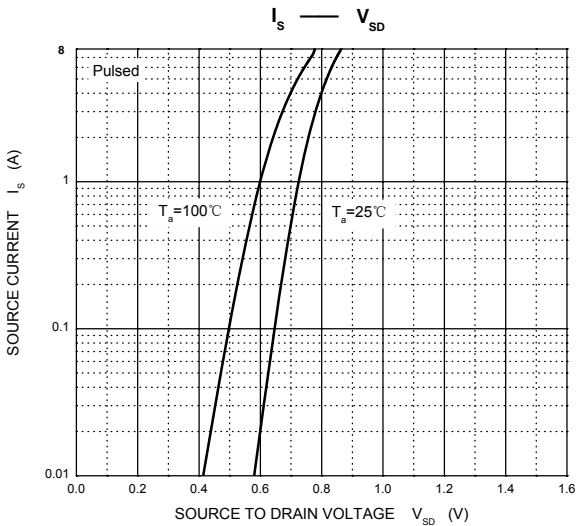
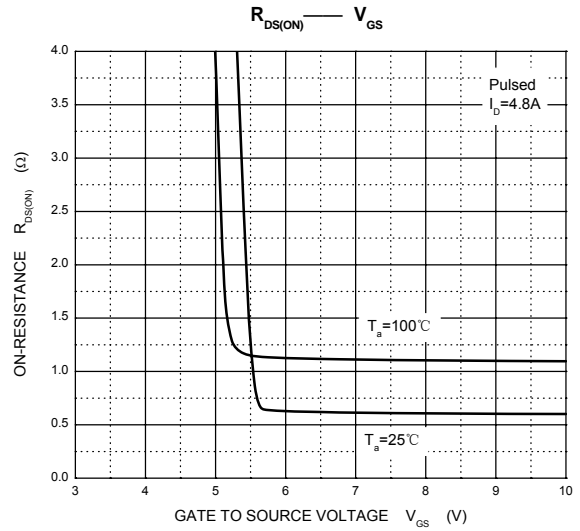
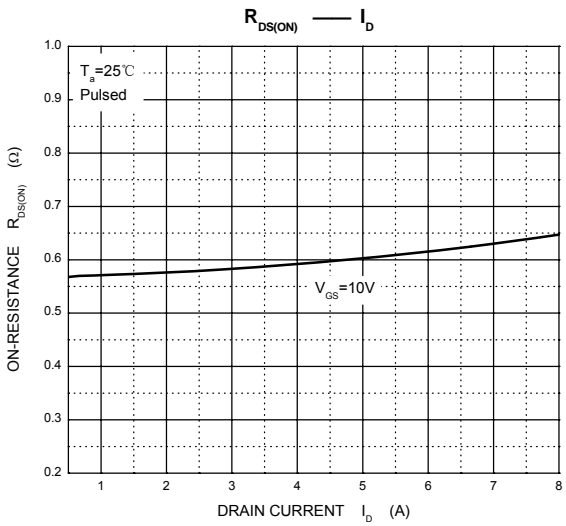
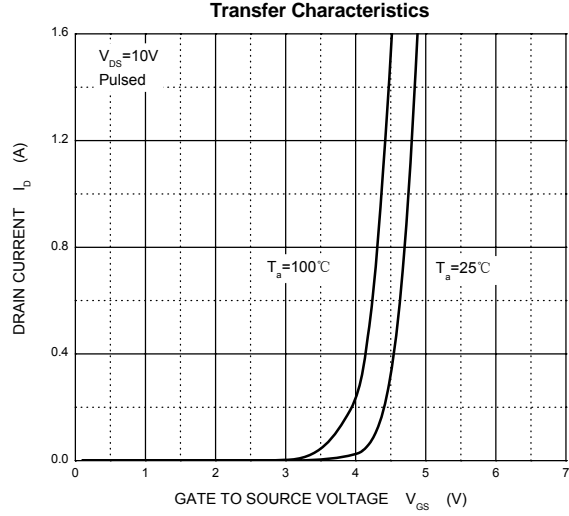
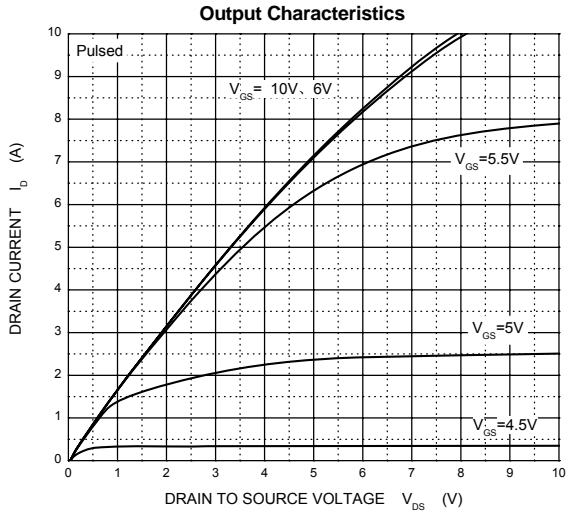
Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Drain-source breakdown voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =250μA	500			V
Gate-threshold voltage	V <sub>th(GS)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	2		4	
Gate-body leakage	I <sub>GSS</sub>	V <sub>DS</sub> =0V, V <sub>GS</sub> =±20V			±100	nA
Zero gate voltage drain current	I <sub>DSS</sub>	V <sub>DS</sub> =500V, V <sub>GS</sub> =0V			25	μA
Drain-source on-resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =4.8A			0.85	Ω
Forward transconductance	g <sub>fs</sub>	V <sub>DS</sub> =50V, I <sub>D</sub> =4.8A	4.9			S
Diode forward voltage	V <sub>SD</sub>	I <sub>S</sub> =8A, V <sub>GS</sub> =0V			2	V
Total gate charge	Q <sub>g</sub>	V <sub>DS</sub> =400V, V <sub>GS</sub> =10V, I <sub>D</sub> =8A			63	nC
Gate-source charge	Q <sub>gs</sub>				9.3	
Gate-drain charge	Q <sub>gd</sub>				32	
Input capacitance	C <sub>iss</sub>	V <sub>DS</sub> =25V, V <sub>GS</sub> =0V, f=1MHz		1300		pF
Output capacitance	C <sub>oss</sub>			310		
Reverse transfer capacitance	C <sub>rss</sub>			120		
Turn-on time	t <sub>d(on)</sub>	V <sub>DD</sub> =250V, R <sub>D</sub> =31Ω, I <sub>D</sub> =8A, R <sub>G</sub> =9.1Ω		14		ns
Rise time	t <sub>r</sub>			23		
Turn-off time	t <sub>d(off)</sub>			49		
Fall time	t <sub>f</sub>			20		

**Notes:**

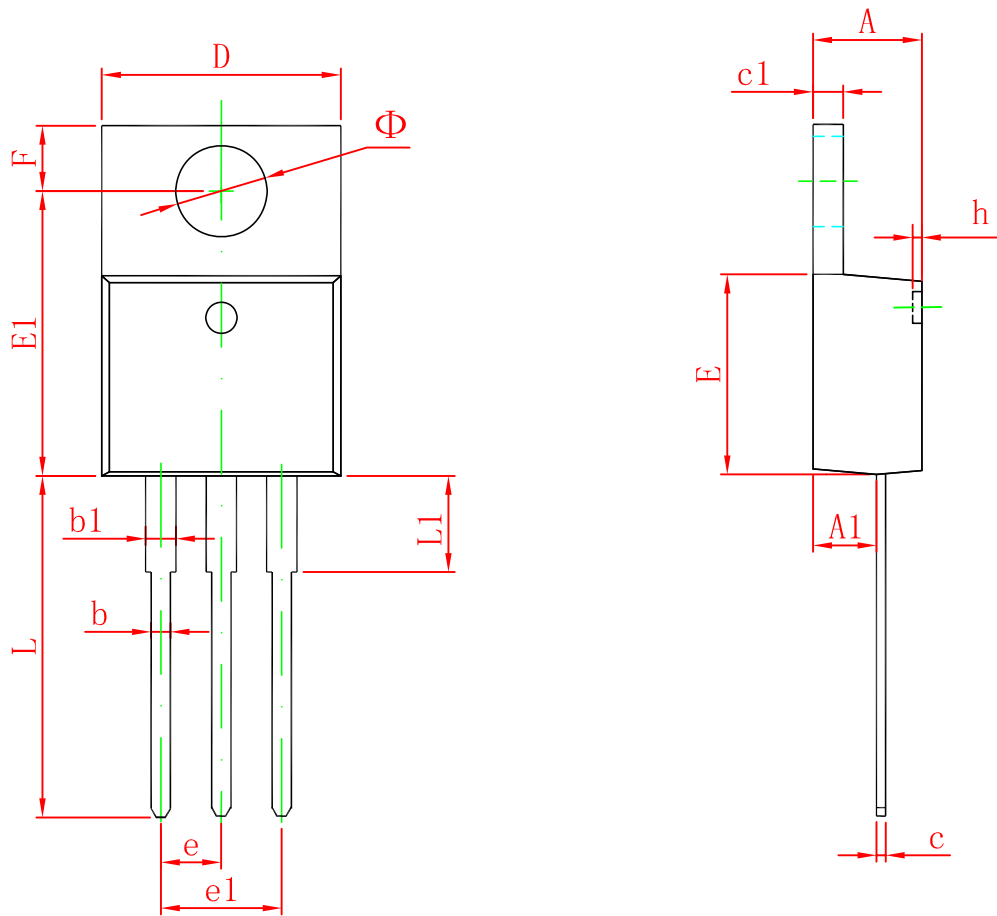
- 1.Repetitive Rating ; Pulse width limited by maximum junction temperature
- 2.L=14mH, I<sub>AS</sub> =8.0A, V<sub>DD</sub>=50V, R<sub>G</sub>=25Ω, starting T<sub>J</sub> = 25°C
- 3.I<sub>SD</sub>≤8.0A, di/dt≤100A/μs, V<sub>DD</sub>≤V<sub>(BR)DSS</sub>, T<sub>J</sub>≤150°C
4. Pulse width ≤300μs, Duty cycle≤2%

# Typical Characteristics

# IRF840



# 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
$\Phi$	3.735	3.935	0.147	0.155