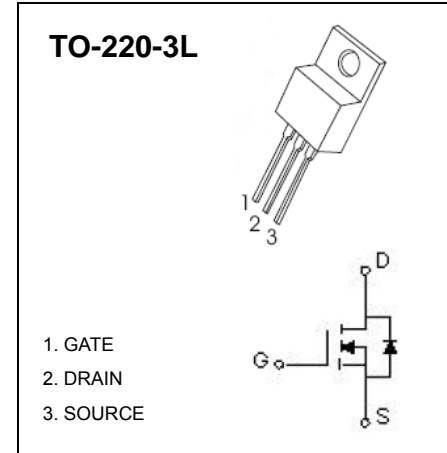


## TO-220!' @Plastic-Encapsulate MOSFETS

**IRF830** MOSFET( N-Channel )

### FEATURES

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



### MAXIMUM RATINGS (T<sub>a</sub>=25°C unless otherwise noted)

Symbol	Parameter	Value	Units
I <sub>D</sub> @T <sub>C</sub> =25°C	Continuous Drain Current, V <sub>GS</sub> @ 10 V	4.5	A
I <sub>D</sub> @T <sub>C</sub> =100°C	Continuous Drain Current, V <sub>GS</sub> @ 10 V	2.9	A
I <sub>DM</sub>	Pulsed Drain Current (note 1)	18	A
P <sub>D</sub>	Power Dissipation	2	W
R <sub>θJA</sub>	Thermal Resistance from Junction to Ambient	62.5	°C/W
V <sub>GS</sub>	Gate-Source Voltage	±20	V
E <sub>AS</sub>	Single Pulse Avalanche Energy (note2)	280	mJ
I <sub>AR</sub>	Avalanche Current (note 1)	4.5	A
E <sub>AR</sub>	Repetitive Avalanche Energy (note 1)	7.4	mJ
dv/dt	Peak Diode Recovery dv/dt (note 3)	3.5	V/ns
T <sub>J</sub>	Junction Temperature	150	°C
T <sub>stg</sub>	Storage Temperature	-55~+150	°C

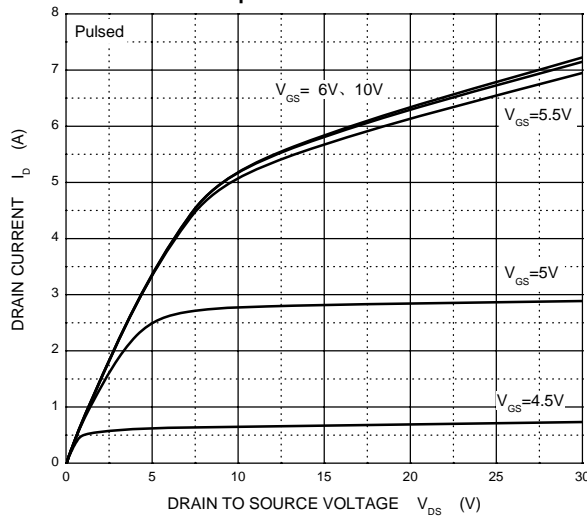
**ELECTRICAL CHARACTERISTICS (Ta=25°C unless otherwise specified)**

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
<b>Drain-source breakdown voltage</b>	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	500			V
<b>Gate-threshold voltage</b>	$V_{(GS)th}$	$V_{DS}=V_{GS}, I_D=250\mu A$	2		4	
<b>Gate-body leakage</b>	$I_{GSS}$	$V_{DS}=0V, V_{GS}=\pm 20V$			$\pm 100$	nA
<b>Zero gate voltage drain current</b>	$I_{DSS}$	$V_{DS}=500V, V_{GS}=0V$			25	$\mu A$
<b>Drain-source on-resistance</b> (note 4)	$R_{DS(on)}$	$V_{GS}=10V, I_D=2.7A$ (note 4)			1.5	$\Omega$
<b>Forward transconductance</b> (note 4)	$g_{fs}$	$V_{DS}=50V, I_D=2.7A$ (note 4)	2.5			S
<b>Diode forward voltage</b>	$V_{SD}$	$I_S=4.5A, V_{GS}=0V$			1.6	V
<b>Total gate charge</b>	$Q_g$	$V_{DS}=400V, V_{GS}=10V, I_D=3.1A$			38	nC
<b>Gate-source charge</b>	$Q_{gs}$				5.0	
<b>Gate-drain charge</b>	$Q_{gd}$				22	
<b>Input capacitance</b> (note 5)	$C_{iss}$	$V_{DS}=25V, V_{GS}=0V, f=1MHz$		610		pF
<b>Output capacitance</b> (note 5)	$C_{oss}$			160		
<b>Reverse transfer capacitance</b> (note 5)	$C_{rss}$			68		
<b>Turn-on delay time</b> (note 4,5)	$t_{d(on)}$	$V_{DD}=250V, R_D=79\Omega,$ $I_D=3.1A, R_G=12\Omega$		8.2		nS
<b>Rise time</b> (note 4,5)	$t_r$			16		nS
<b>Turn-off delay time</b> (note 4,5)	$t_{d(off)}$			42		nS
<b>Fall time</b> (note 4,5)	$t_f$			16		nS

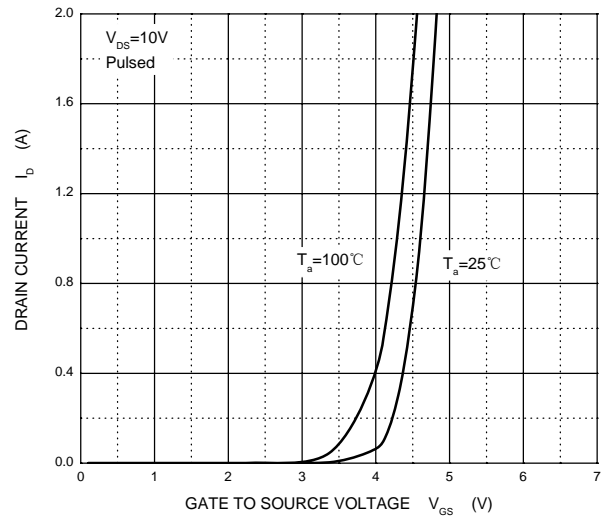
Notes:

1. Repetitive Rating : Pulse width limited by maximum junction temperature.
2.  $L = 24mH, I_{AS} = 4.5A, V_{DD} = 50V, R_G = 25\Omega$  Starting  $T_J = 25^\circ C$ .
3.  $I_{SD} = 4.5A, di/dt = 300A/\mu s, V_{DD} = V_{(BR)DSS}$ , Starting  $T_J = 25^\circ C$ .
4. Pulse Test : Pulse width  $\leq 300\mu s$ , Duty cycle  $\leq 2\%$ .
5. These parameters have no way to verify.

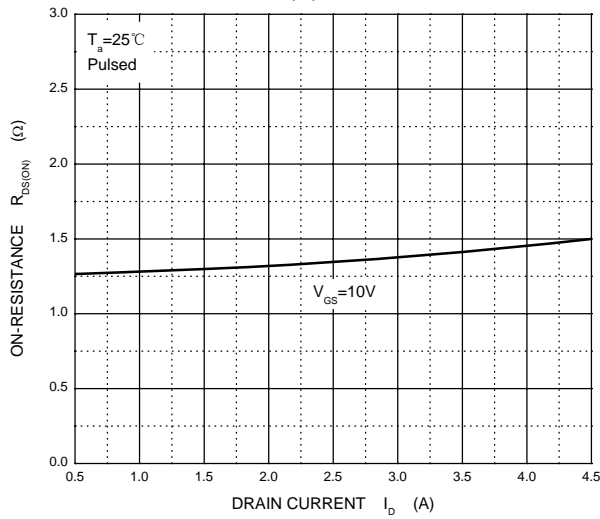
Output Characteristics



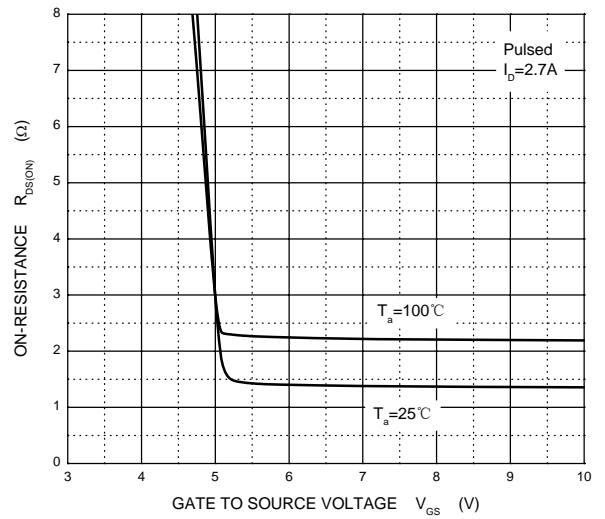
Transfer Characteristics



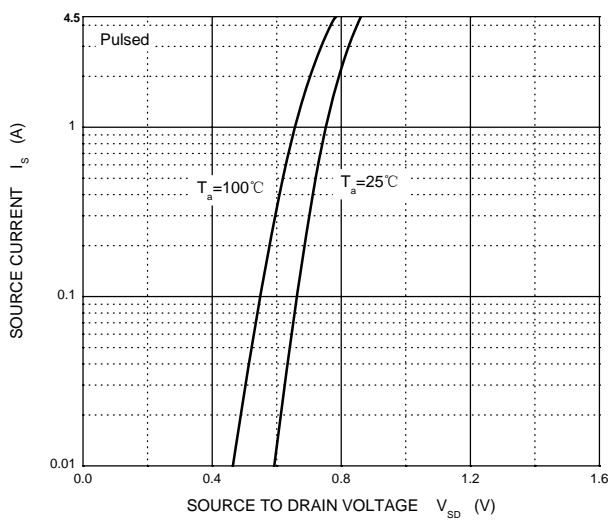
$R_{DS(ON)}$  —  $I_D$



$R_{DS(ON)}$  —  $V_{GS}$



$I_S$  —  $V_{SD}$



Threshold Voltage

