

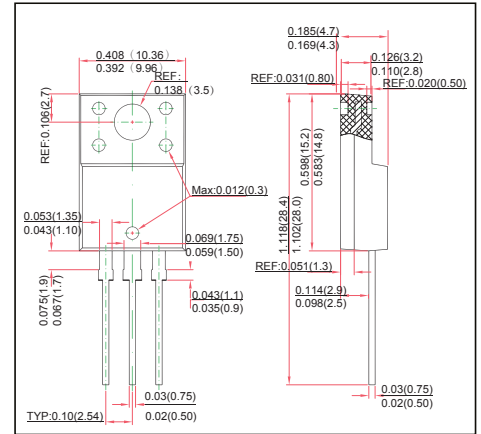
TO-220F Plastic-Encapsulate MOSFETS

FEATURE

- High Current Rating
- Lower RDS(on)
- Lower Capacitance
- Lower Total Gate Charge
- Tighter VSD Specifications Avalanche
- Energy Specified Fast Switching
- Capability N-Channel Power MOSFET

MECHANICAL DATA

- Case style: TO-220F molded plastic
- Mounting position: any



MAXIMUM RATINGS AND CHARACTERISTICS

@ 25°C Ambient Temperature (unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	650	V
Gate-Source Voltage	V_{GS}	± 30	V
Continuous Drain Current	I_D	7.4	A
Pulsed Drain Current	I_{DM}	29.6	A
Single Pulsed Avalanche Energy (note1)	E_{AS}	245	mJ
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	62.5	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 ~ +150	°C
Maximum Lead Temperature for Soldering Purposes , Duration for 5 Seconds	T_L	260	°C

MOSFET ELECTRICAL CHARACTERISTICS $T_A=25^\circ\text{C}$ unless otherwise specified

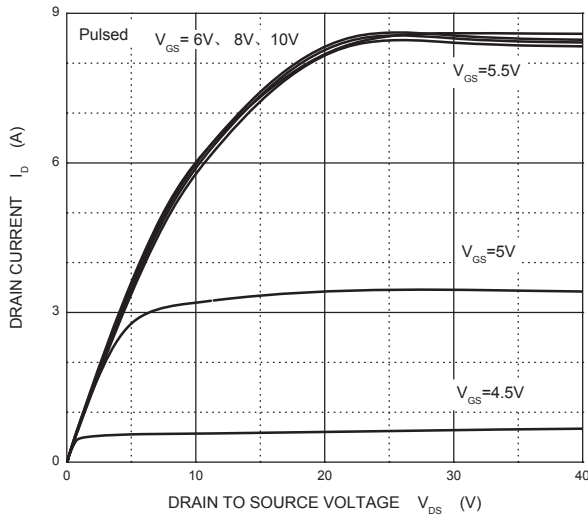
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Off characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	650			V
Zero gate voltage drain current	I_{DSS}	$V_{DS} = 650V, V_{GS} = 0V$			10	μA
Gate-body leakage current	I_{GSS}	$V_{DS} = 0V, V_{GS} = \pm 30V$			± 100	nA
Drain-source diode forward voltage	V_{SD}	$V_{GS} = 0, I_S = 7.4A$			1.4	V
On characteristics (note 2)						
Gate-threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	2	3.5	4	V
Static drain-source on-resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 3.7A$		1.1	1.3	Ω
Forward transconductance	g_{fs}	$V_{DS} = 10V, I_D = 3.7A$	5			S
Dynamic characteristics (note 3)						
Input capacitance	C_{iss}	$V_{DS} = 25V, V_{GS} = 0V, f = 1MHz$			1400	pF
Output capacitance	C_{oss}				180	
Reverse transfer capacitance	C_{rss}				21	
Switching characteristics (note 3)						
Total gate charge	Q_g	$V_{DS} = 520V, V_{GS} = 10V, I_D = 7.4A$		29	38	nC
Gate-source charge	Q_{gs}			7		
Gate-drain charge	Q_{gd}			14.5		
Turn-on delay time	$t_{d(on)}$	$V_{DD} = 325V, R_G = 25\Omega, I_D = 7.4A$			70	ns
Turn-on rise time	t_r				170	
Turn-off delay time	$t_{d(off)}$				140	
Turn-off fall time	t_f				130	

Notes :

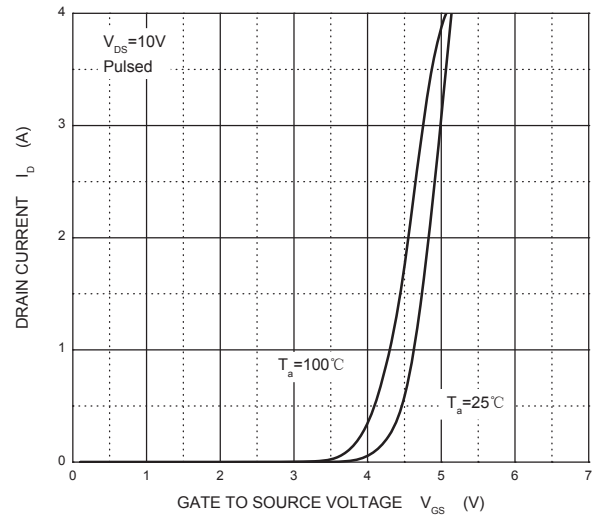
1. $L=10mH, I_{AS}=7A, V_{DD}=50V, V_{GS}=10V, R_G=25\Omega$, Starting $T_J=25^\circ\text{C}$.
2. Pulse Test: Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
3. These parameters have no way to verify.

RATINGS AND CHARACTERISTIC CURVES

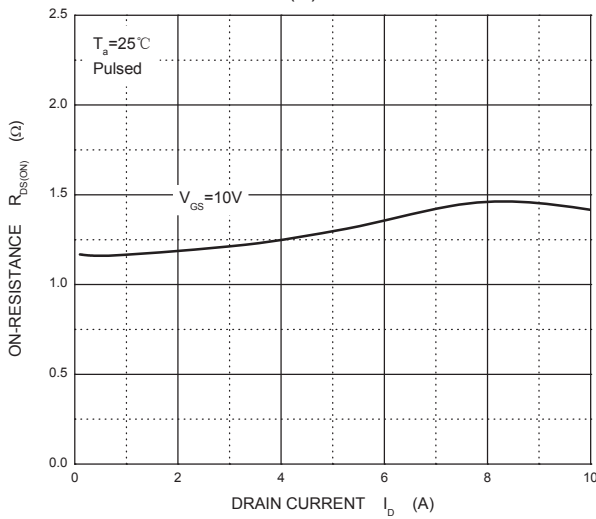
Output Characteristics



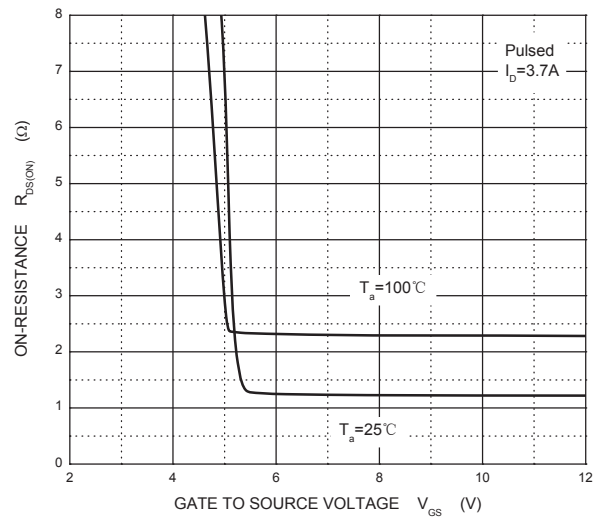
Transfer Characteristics



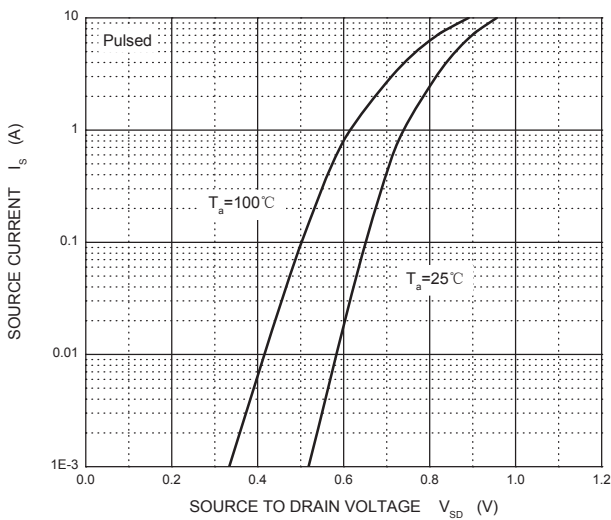
$R_{DS(ON)}$ — I_D



$R_{DS(ON)}$ — V_{GS}



I_S — V_{SD}



Threshold Voltage

