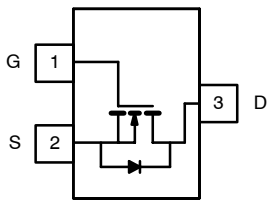
N-Channel 60-V (D-S) MOSFET

PRODUCT SUMMARY		
V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A)
60	0.16 @ V_{GS} = 10 V	2.0
	0.22 @ V_{GS} = 4.5 V	1.7

FEATURES

- 100% R_g Tested

(SOT-23)



Top View
TF2308 (A8)*

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C UNLESS OTHERWISE NOTED)				
Parameter		Symbol	Limit	Unit
Drain-Source Voltage		V_{DS}	60	V
Gate-Source Voltage		V_{GS}	±20	
Continuous Drain Current (T_J = 150°C)[a]	T_A = 25°C	I_D	2.0	A
Pulsed Drain Current[b]		I_{DM}	10	
Continuous Source Current (Diode Conduction)[a]		I_S	1.0	
Maximum Power Dissipation[a]	T_A = 25°C	P_D	1.25	W
Operating Junction and Storage Temperature Range		T_J, T_{stg}	-55 to 150	°C

THERMAL RESISTANCE RATINGS			
Parameter	Symbol	Maximum	Unit
Maximum Junction-to-Ambient[a]	R_{thJA}	100	°C/W
Maximum Junction-to-Ambient[c]		166	

Notes
a. Surface Mounted on FR4 Board, t = ≤5 sec.
b. Pulse width limited by maximum junction temperature.
c. Surface Mounted on FR4 Board

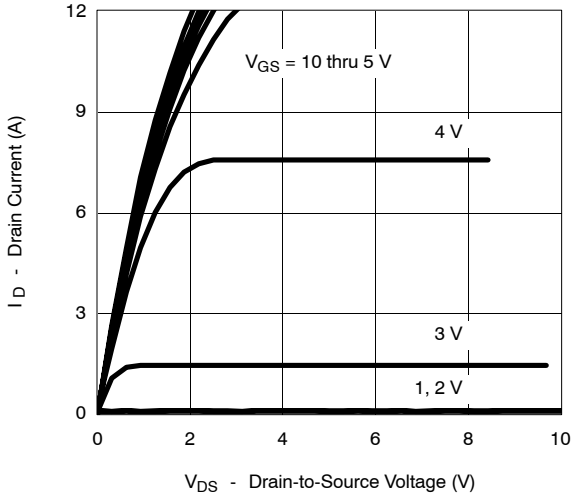
SPECIFICATIONS (T_J = 25°C UNLESS OTHERWISE NOTED)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{DS} = 0 V, I_D = 250 μA	60			V
Gate-Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250 μA	1.5			
Gate-Body Leakage	I_{GSS}	V_{DS} = 0 V, V_{GS} = ±20 V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 60 V, V_{GS} = 0 V			0.5	μA
		V_{DS} = 60 V, V_{GS} = 0 V, T_J = 55°C			10	
On-State Drain Current[a]	$I_{D(on)}$	V_{DS} ≥ 4.5 V, V_{GS} = 10 V	6			A
		V_{DS} ≥ 4.5 V, V_{GS} = 4.5 V	4			
Drain-Source On-State Resistance[a]	$r_{DS(on)}$	V_{GS} = 10 V, I_D = 2.0 A		0.125	0.16	Ω
		V_{GS} = 4.5 V, I_D = 1.7 A		0.155	0.22	
Forward Transconductance[a]	g_{fs}	V_{DS} = 4.5 V, I_D = 2.0 A		4.6		S
Diode Forward Voltage[a]	V_{SD}	I_S = 1 A, V_{GS} = 0 V		0.77	1.2	V
Dynamic						
Total Gate Charge	Q_g	V_{DS} = 30 V, V_{GS} = 10 V, I_D = 2.0 A		4.8	10	nC
Gate-Source Charge	Q_{gs}			0.8		
Gate-Drain Charge	Q_{gd}			1.0		
Gate Resistance	R_g		0.5		3.3	Ω
Input Capacitance	C_{iss}	V_{DS} = 25 V, V_{GS} = 0 V, f = 1 MHz		240		pF
Output Capacitance	C_{oss}			50		
Reverse Transfer Capacitance	C_{rss}			15		
Switching						
Turn-On Delay Time	$t_{d(on)}$	V_{DD} = 30 V, R_L = 30 Ω I_D ≅ 1 A, V_{GEN} = 4.5 V, R_G = 6 Ω		7	15	ns
Rise Time	t_r			10	20	
Turn-Off Delay Time	$t_{d(off)}$			17	35	
Fall Time	t_f			6	15	

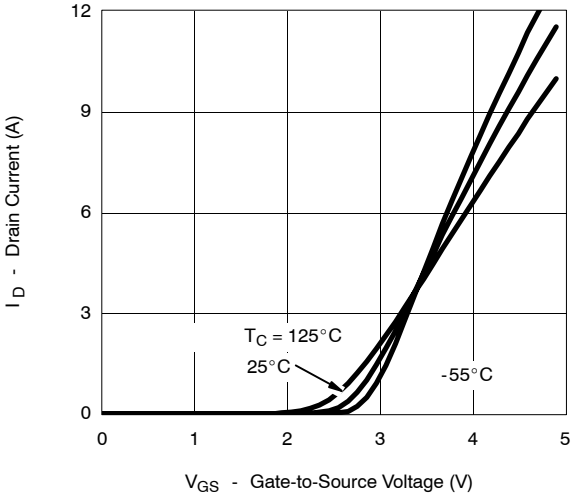
Notes
a. Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2%.

TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

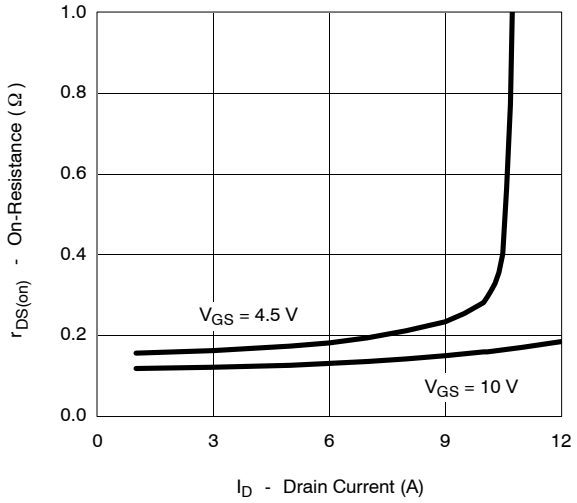
Output Characteristics



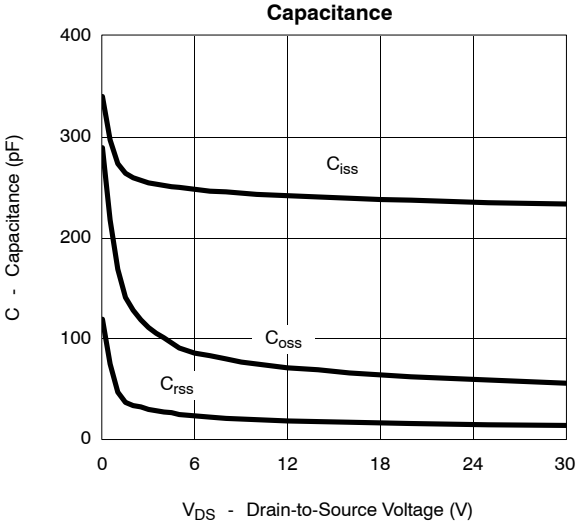
Transfer Characteristics



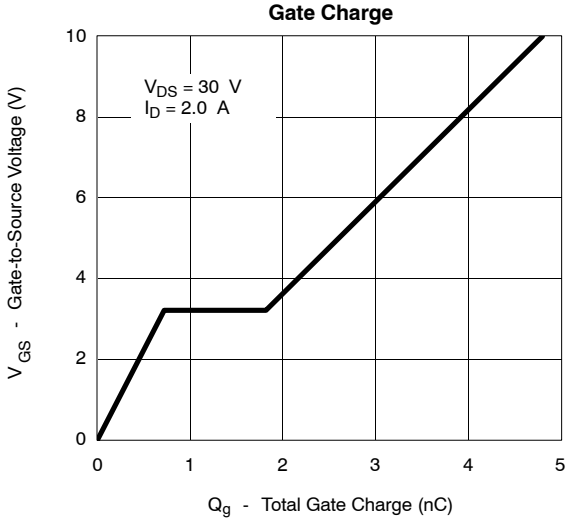
On-Resistance vs. Drain Current



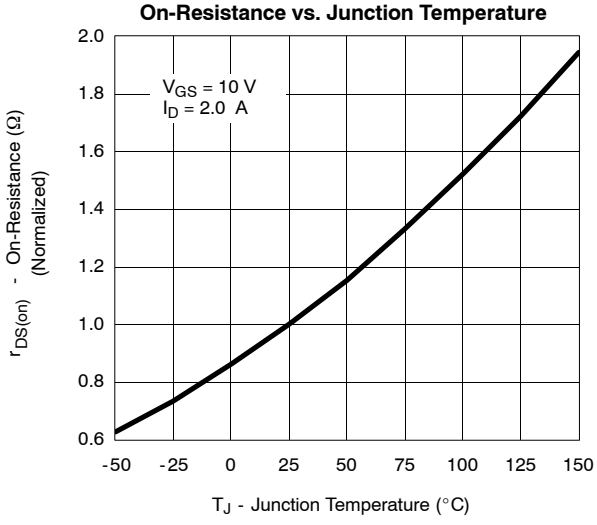
Capacitance



Gate Charge

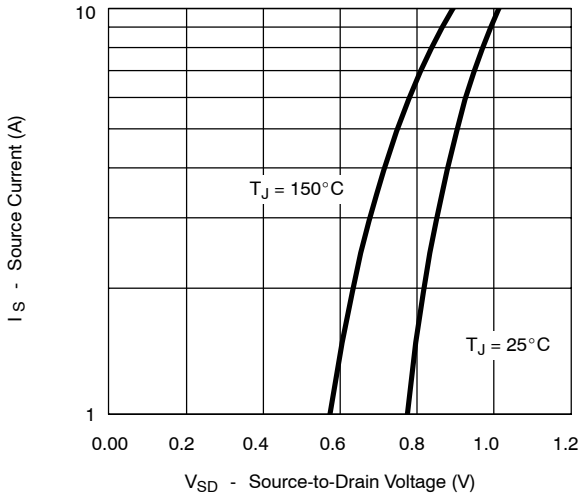


On-Resistance vs. Junction Temperature

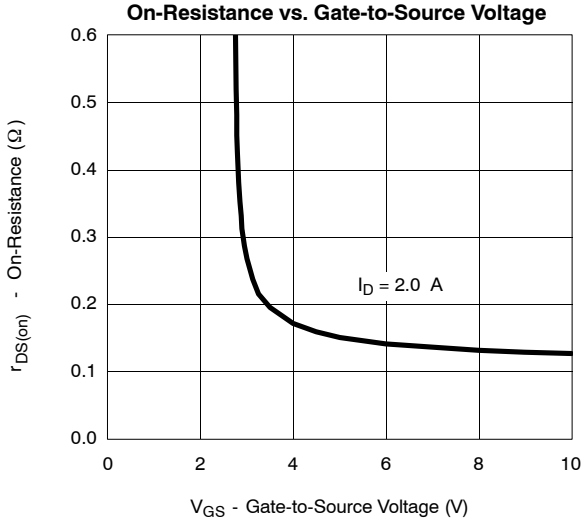


TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

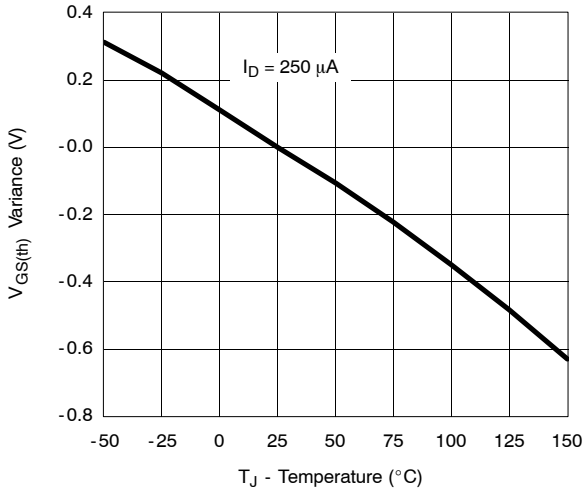
Source-Drain Diode Forward Voltage



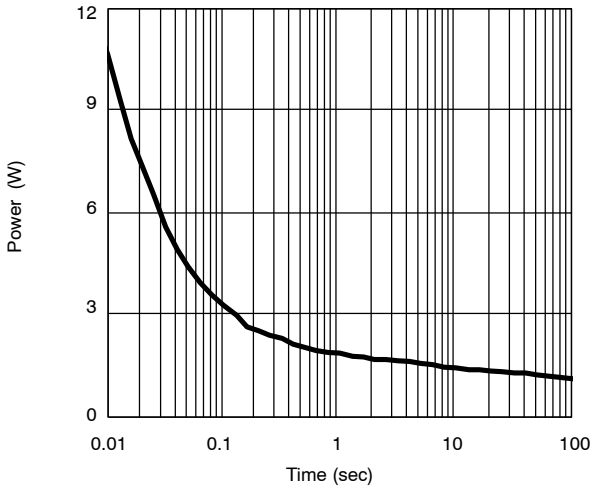
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage



Single Pulse Power



Normalized Thermal Transient Impedance, Junction-to-Ambient