P-Channel 30-V (D-S) MOSFET

PRODUCT SUMMARY		
V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A)[b]
-30	0.072 @ V_{GS} = -10 V	-2.8
	0.120 @ V_{GS} = -4.5 V	-2.0

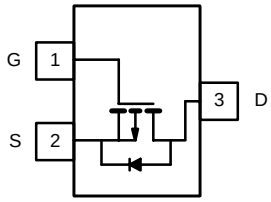
FEATURES

- TrenchFET® Power MOSFETS

APPLICATIONS

- Load Switch
- PA Switch

TO-236
(SOT-23)



Top View

Ordering Information: Si2341

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C UNLESS OTHERWISE NOTED)

Parameter		Symbol	5 sec	Steady State	Unit
Drain-Source Voltage		V_{DS}	-30		V
Gate-Source Voltage		V_{GS}	±20		
Continuous Drain Current (T_J = 150°C)[b]	T_A= 25°C	I_D	-2.8	-2.5	A
	T_A= 70°C		-2.2	-2.0	
Pulsed Drain Current[a]		I_{DM}	-12		
Continuous Source Current (Diode Conduction)[b]		I_S	-0.75	-0.6	
Power Dissipation[b]	T_A= 25°C	P_D	0.9	0.71	W
	T_A= 70°C		0.57	0.45	
Operating Junction and Storage Temperature Range		T_J, T_{stg}	-55 to 150		°C

THERMAL RESISTANCE RATINGS

Parameter	Symbol	Typical	Maximum	Unit
Maximum Junction-to-Ambient[b]	R_{thJA}	115	140	°C/W
Maximum Junction-to-Ambient[c]		140	175	
Maximum Junction-to-Foot (Drain)	R_{thJF}	60	75	

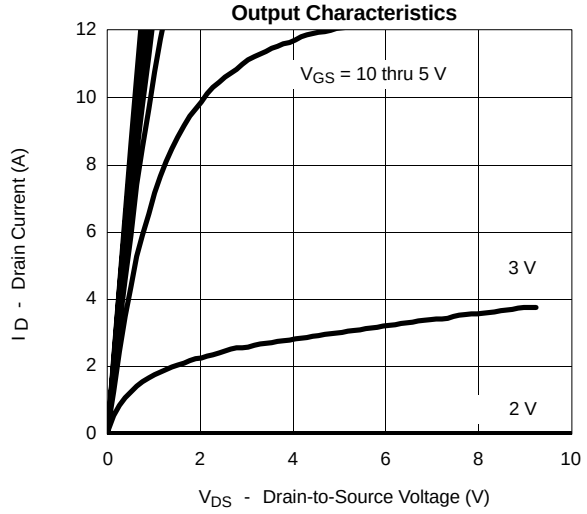
Notes
a. Pulse width limited by maximum junction temperature.
b. Surface Mounted on FR4 Board, t ≤ 5 sec.
c. Surface Mounted on FR4 Board.

SPECIFICATIONS (T_J = 25°C UNLESS OTHERWISE NOTED)						
Parameter	Symbol	Test Conditions	Limits			Unit
			Min	Typ	Max	
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0 V, I_D = -10 μA	-30			V
Gate-Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = -250 μA	-1.0		-3.0	
Gate-Body Leakage	I_{GSS}	V_{DS} = 0 V, V_{GS} = ±20 V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = -24 V, V_{GS} = 0 V			-1	μA
		V_{DS} = -24 V, V_{GS} = 0 V, T_J = 55°C			-10	
On-State Drain Current[a]	$I_{D(on)}$	V_{DS} ≤ -5 V, V_{GS} = -10 V	-6			A
Drain-Source On-Resistance[a]	$r_{DS(on)}$	V_{GS} = -10 V, I_D = -2.8 A		0.057	0.072	Ω
		V_{GS} = -4.5 V, I_D = -2.0 A		0.090	0.120	
Forward Transconductance[a]	g_{fs}	V_{DS} = -5 V, I_D = -2.8 A		8.0		S
Diode Forward Voltage	V_{SD}	I_S = -0.75 A, V_{GS} = 0 V		-0.8	-1.2	V
Dynamic[b]						
Total Gate Charge	Q_g	V_{DS} = -15 V, V_{GS} = -10 V I_D ≅ -2.8 A		9.5	15	nC
Gate-Source Charge	Q_{gs}			1.5		
Gate-Drain Charge	Q_{gd}			2.5		
Input Capacitance	C_{iss}	V_{DS} = -15 V, V_{GS} = 0, f = 1 MHz		400		pF
Output Capacitance	C_{oss}			95		
Reverse Transfer Capacitance	C_{rss}			70		
Switching[c]						
Turn-On Time	$t_{d(on)}$	V_{DD} = -15 V, R_L =15 Ω I_D ≅ -1.0 A, V_{GEN} = -4.5 V R_G = 6 Ω		7	15	ns
	t_r			15	25	
Turn-Off Time	$t_{d(off)}$			20	30	
	t_f			20	30	

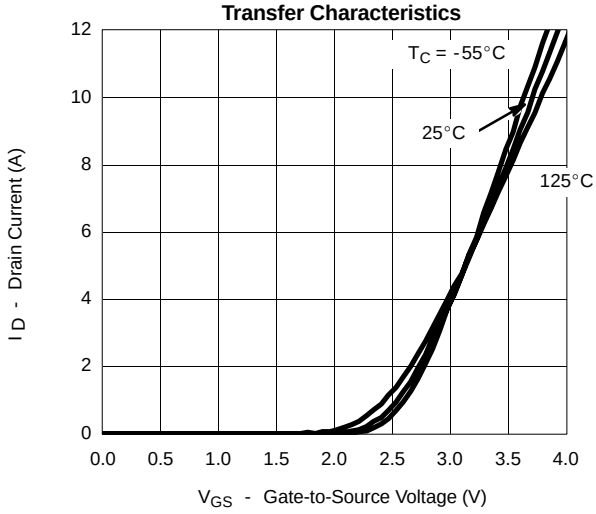
Notes
a. Pulse test: PW ≤300 μs duty cycle ≤2%.
b. For DESIGN AID ONLY, not subject to production testing.
c. Switching time is essentially independent of operating temperature.

TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

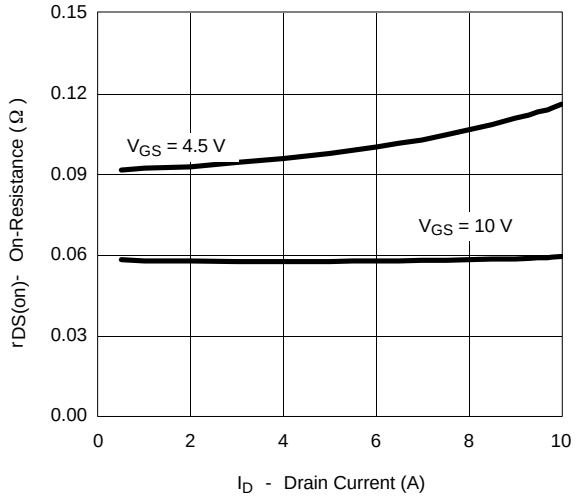
Output Characteristics



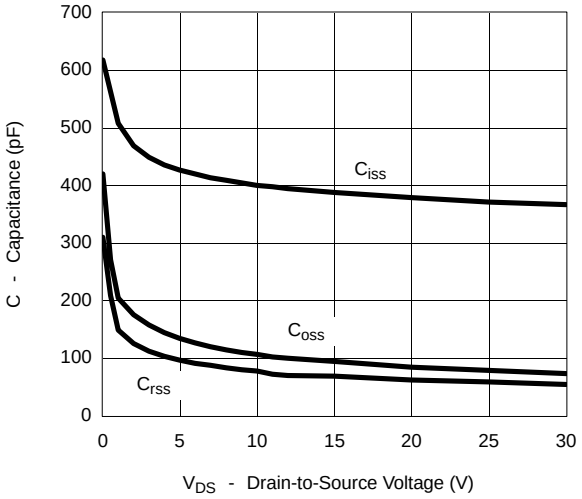
Transfer Characteristics



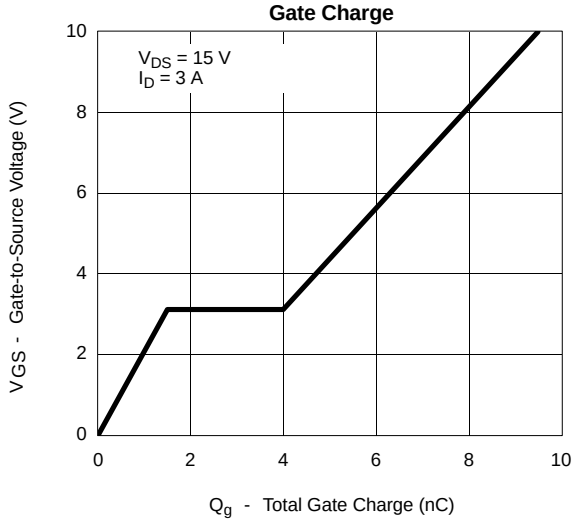
On-Resistance vs. Drain Current



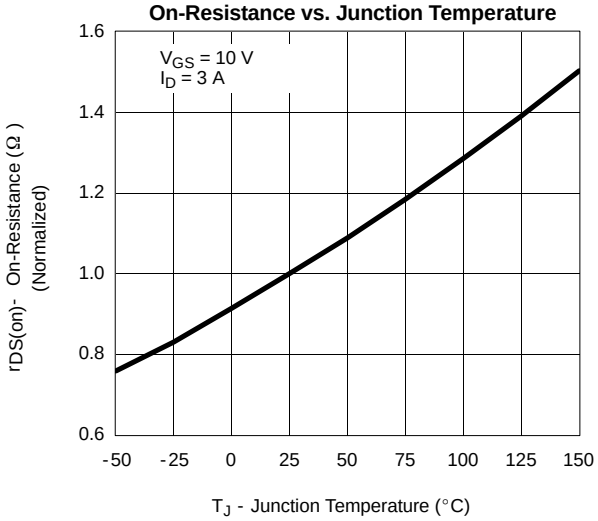
Capacitance



Gate Charge



On-Resistance vs. Junction Temperature



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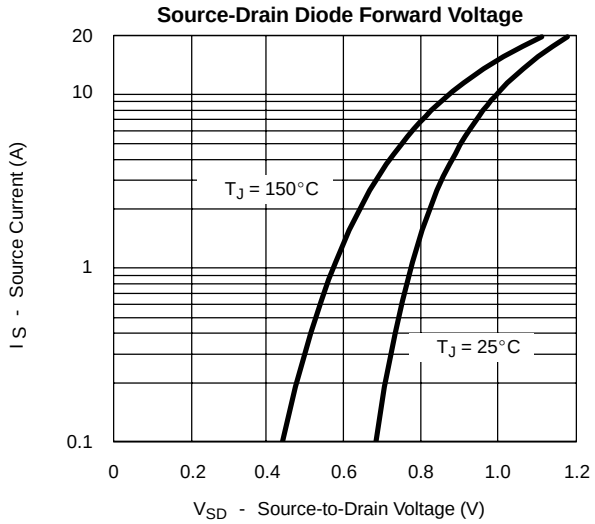

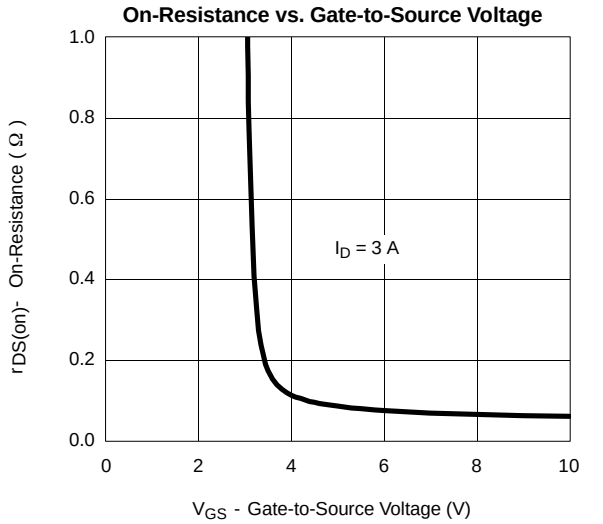

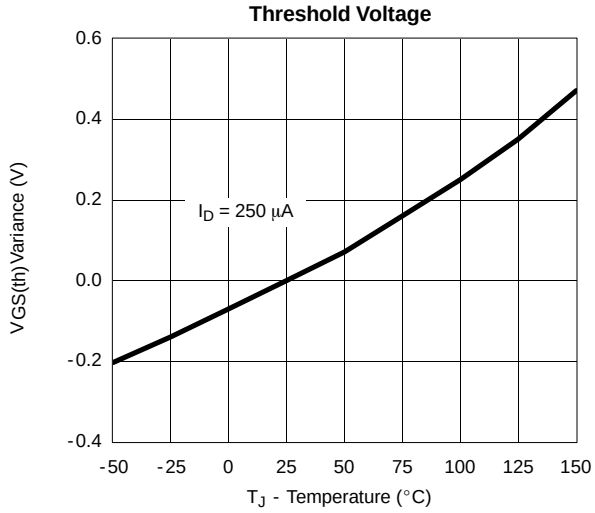

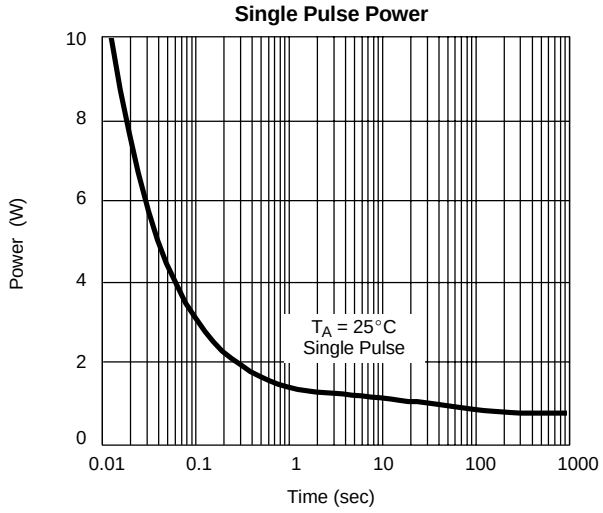

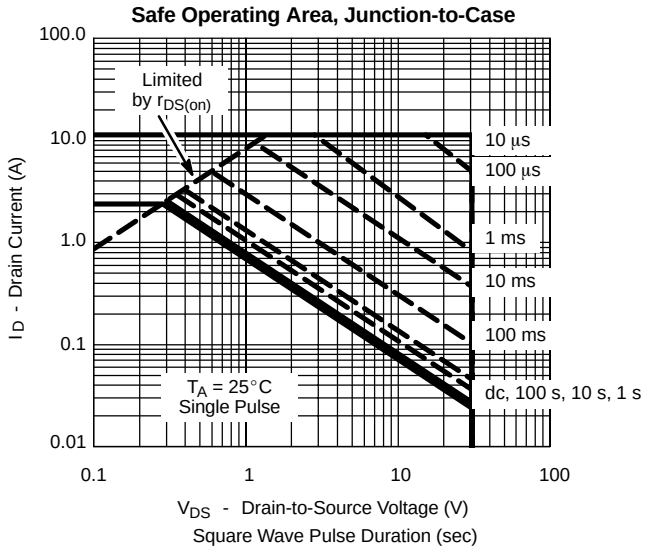

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