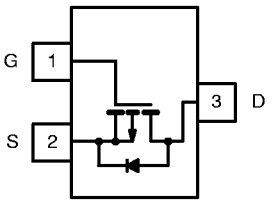
P-Channel 30-V (D-S) Rated MOSFET

New Product

PRODUCT SUMMARY		
V_{DS} (V)	$R_{DS(ON)}$ (Ω)	I_D (A)
–30	0.240 @ V_{GS} = –10 V	–1.7
	0.460 @ V_{GS} = –4.5 V	–1.3

TO-236
(SOT-23)



Top View

Si2303DS (A3)*

*Marking Code

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C UNLESS OTHERWISE NOTED)				
PARAMETER		SYMBOL	LIMIT	UNIT
Drain-Source Voltage		V_{DS}	–30	V
Gate-Source Voltage		V_{GS}	±20	
Continuous Drain Current (T_J = 150°C) (surface mounted on FR4 board, t ≤ 5 sec)	T_A = 25°C	I_D	–1.7	A
	T_A = 70°C		–1.4	
Pulsed Drain Current[A]		I_{DM}	–10	
Continuous Source Current (MOSFET Diode Conduction) (surface mounted on FR4 board, t ≤ 5 sec)		I_S	–1.25	
Maximum Power Dissipation[A]	T_A = 25°C	P_D	1.25	W
	T_A = 70°C		0.8	
Operating Junction and Storage Temperature Range		T_J, T_{stg}	–55 to 150	°C

THERMAL RESISTANCE RATINGS			
PARAMETER	SYMBOL	TYPICAL	UNIT
Maximum Junction-to-Ambient (surface mounted on FR4 board, t ≤ 5 sec)	R_{thJA}	100	°C/W
Maximum Junction-to-Ambient (surface mounted on FR4 board)		166	

Notes
A. Pulse width limited by maximum junction temperature.

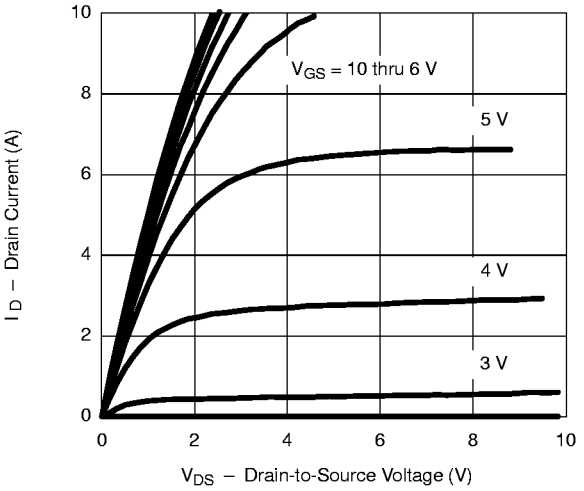
Updates to this data sheet may be obtained via facsimile by calling Siliconix FaxBack, 1-408-970-5600. Please request FaxBack document #70770.

MOSFET 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_{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			
Gate-Body Leakage	I_{GSS}	V_{DS} = 0 V, V_{GS} = ±20 V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = –30 V, V_{GS} = 0 V			–1	µA
		V_{DS} = –30 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-State Resistance[A]	$r_{DS(on)}$	V_{GS} = –10 V, I_D = –1.7 A		0.190	0.240	Ω
		V_{GS} = –4.5 V, I_D = –1.3 A		0.240	0.460	
Forward Transconductance[A]	g_{fs}	V_{DS} = –10 V, I_D = –1.7 A		2.4		S
Diode Forward Voltage	V_{SD}	I_S = –1.25 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 = –1.7 A		5.8	10	nC
Gate-Source Charge	Q_{gs}			0.8		
Gate-Drain Charge	Q_{gd}			1.5		
Input Capacitance	C_{iss}	V_{DS} = –15 V, V_{GS} = 0 V, f = 1 MHz		226		pF
Output Capacitance	C_{oss}			87		
Reverse Transfer Capacitance	C_{rss}			19		
SWITCHING[C]						
Turn-On Delay Time	$t_{d(on)}$	V_{DD} = –15 V, R_L = 15 Ω I_D ≅ –1 A, V_{GEN} = –10 V, R_G = 6 Ω		9	20	ns
Rise Time	t_r			9	20	
Turn-Off Delay Time	$t_{d(off)}$			18	35	
Fall Time	t_f			6	20	

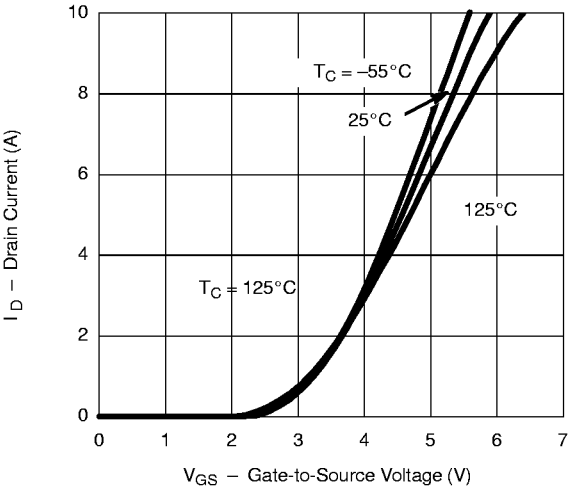
Notes
A. Pulse test: PW ≤300 µs duty cycle ≤2%.
B. For DESIGN AID ONLY, not subject to production testing.
C. Switching time is essentially independent of operating temperature.

TYPICAL CHARACTERISTICS (25°C UNLESS OTHERWISE NOTED)

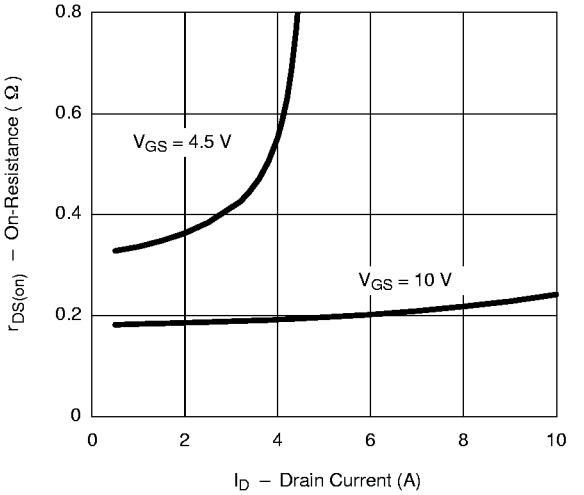
Output Characteristics



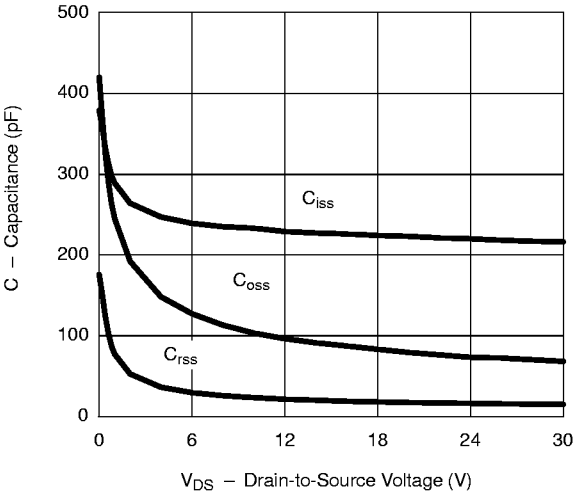
Transfer Characteristics



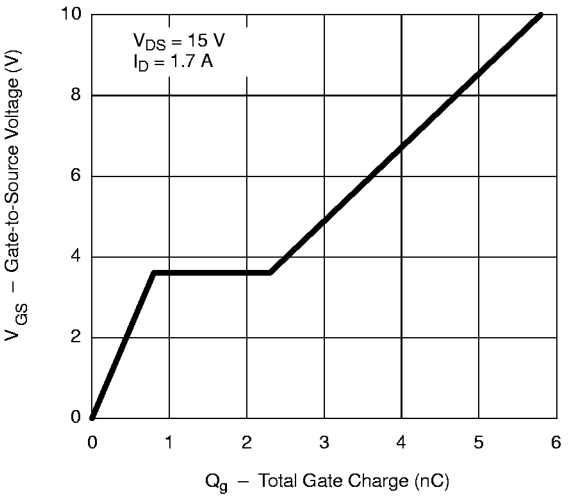
On-Resistance vs. Drain Current



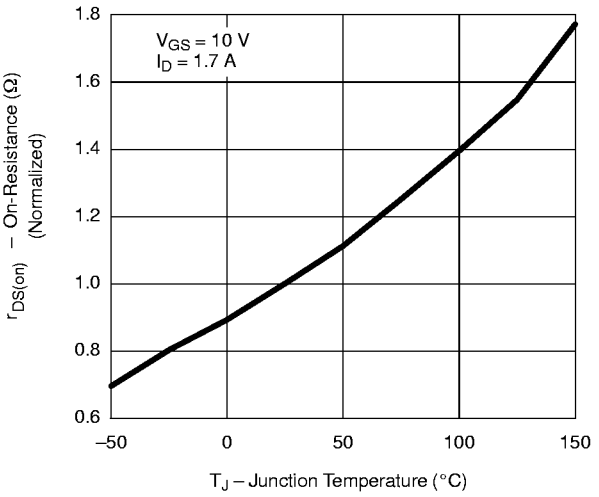
Capacitance



Gate Charge

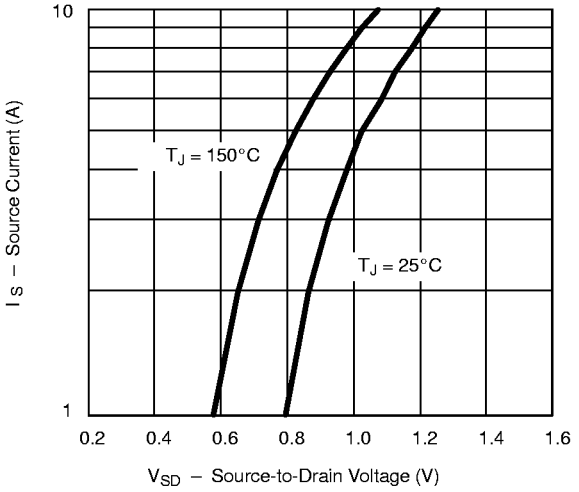


On-Resistance vs. Junction Temperature

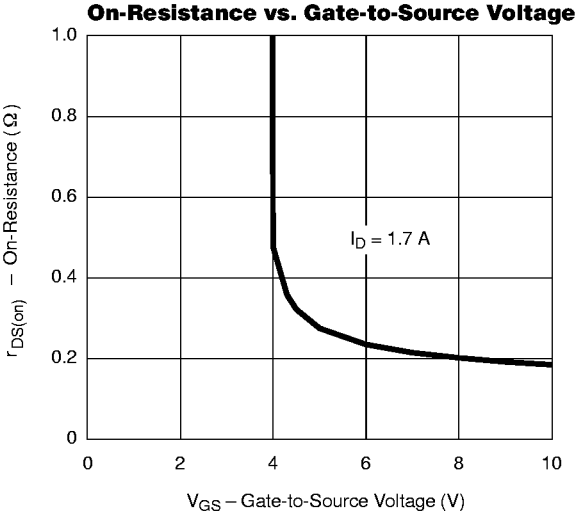


TYPICAL CHARACTERISTICS (25°C UNLESS NOTED) **MOSFET**

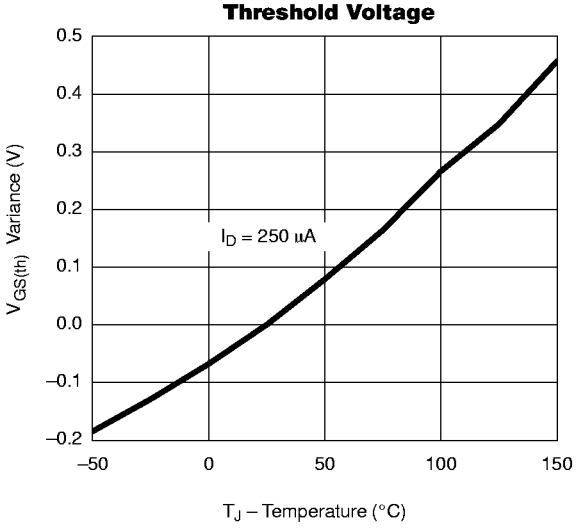
Source-Drain Diode Forward Voltage



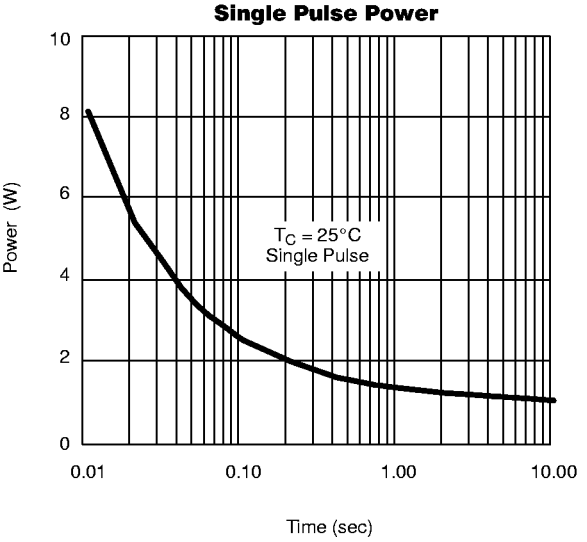
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage



Single Pulse Power



Normalized Thermal Transient Impedance, Junction-to-Ambient