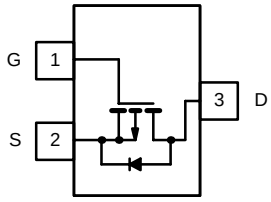
New Product

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

PRODUCT SUMMARY		
V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A)[b]
–30	0.240 @ V_{GS} = –10 V	–1.4
	0.460 @ V_{GS} = –4.5 V	–1.0

TO-236
(SOT-23)



Top View

Si2303DS (3A)*

*Marking Code

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	–1.4	–1.3	A
	T_A= 70°C		–1.1	–1.0	
Pulsed Drain Current[a]		I_{DM}	–10		
Continuous Source Current (Diode Conduction)[b]		I_S	–0.75	–0.6	
Power Dissipation[b]	T_A= 25°C	P_D	0.9	0.7	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	

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

For SPICE model information via the Worldwide Web: http://www.vishay.com/www/product/spice.htm

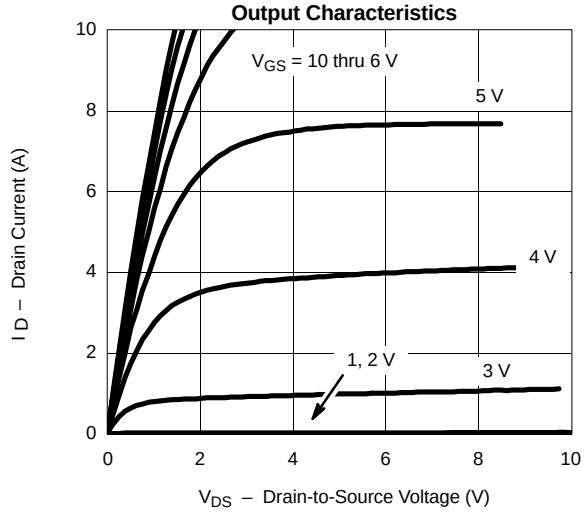
SPECIFICATIONS (T_J = 25°C UNLESS OTHERWISE NOTED)

Parameter	Symbol	Test Conditions	Limits Min	Limits Typ	Limits 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		–3.0	V
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	μA
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 = –1.7 A		0.120	0.240	Ω
		V_{GS} = –4.5 V, I_D = –1.3 A		0.230	0.460	Ω
Forward Transconductance[a]	g_{fs}	V_{DS} = –5 V, I_D = –1.7 A		2.4		S
Diode Forward Voltage	V_{SD}	I_S = –0.75 A, V_{GS} = 0 V		–0.80	–1.2	V
Dynamic[b]						
Total Gate Charge	Q_g	V_{DS} = –15 V, V_{GS} = –10 V I_D ≅ –1.7 A		4.5	10	nC
Gate-Source Charge	Q_{gs}			0.9		nC
Gate-Drain Charge	Q_{gd}			0.9		nC
Input Capacitance	C_{iss}	V_{DS} = –15 V, V_{GS} = 0, f = 1 MHz		260		pF
Output Capacitance	C_{oss}			65		pF
Reverse Transfer Capacitance	C_{rss}			35		pF
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		6	20	ns
	t_r			10	20	ns
Turn-Off Time	$t_{d(off)}$			15	35	ns
	t_f			7	20	ns

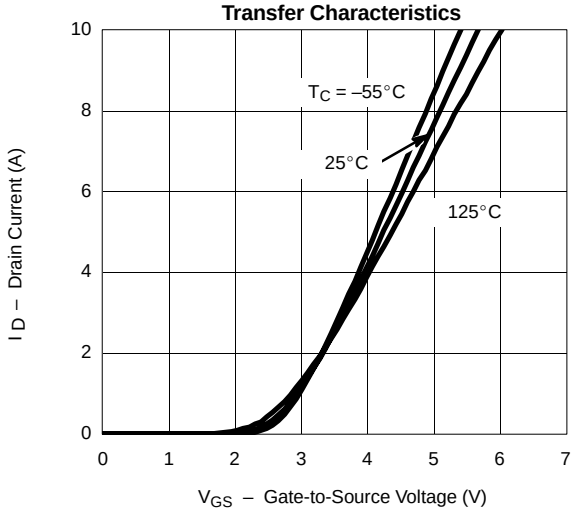
Notes
a. Pulse test: PW ≤300 μs duty cycle ≤2%.
b. For DESIGN AID ONLY, not subject to production testing.
c. Switching time is essentially independent of operating temperature. • FaxBack 408-970-5600

TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

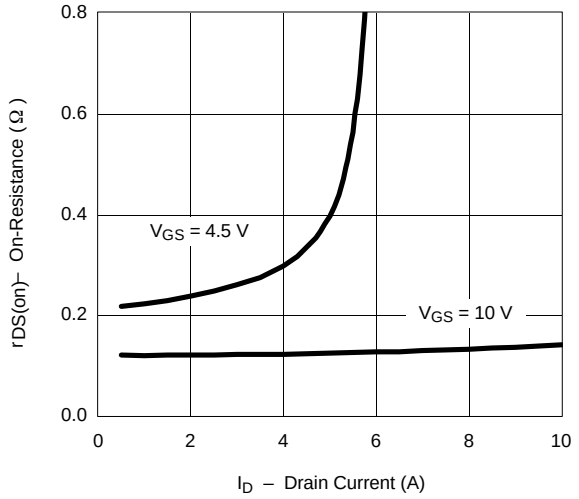
Output Characteristics



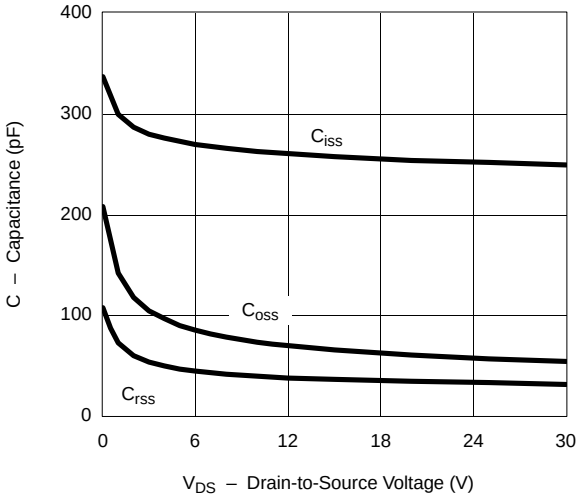
Transfer Characteristics



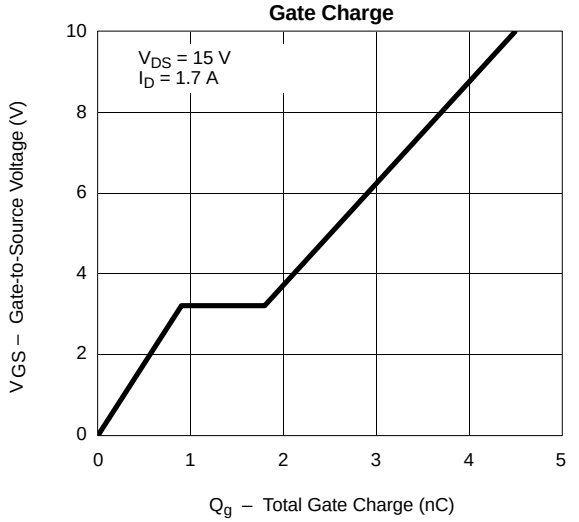
On-Resistance vs. Drain Current



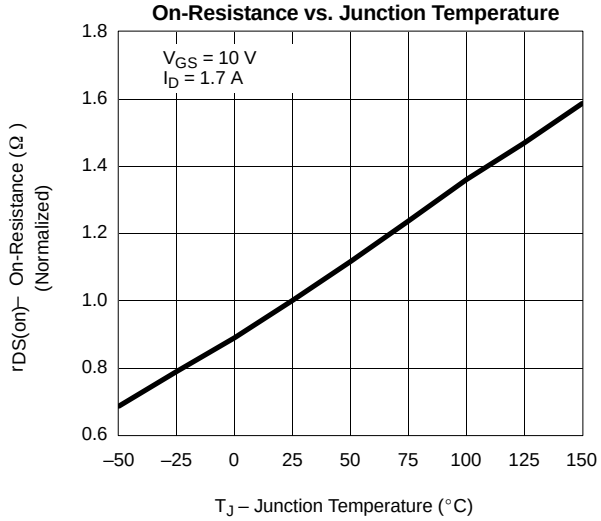
Capacitance



Gate Charge

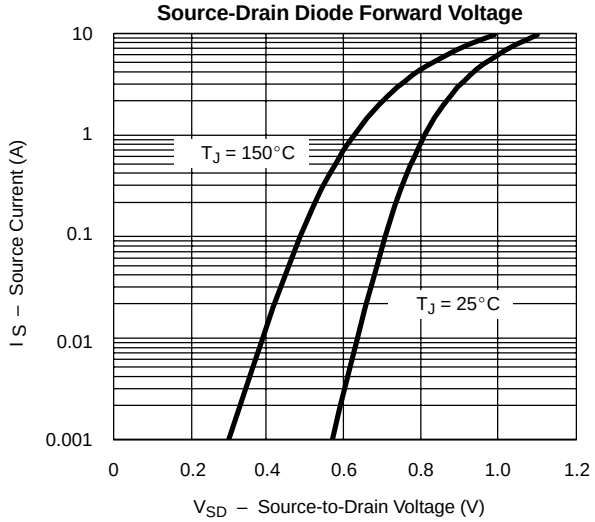


On-Resistance vs. Junction Temperature

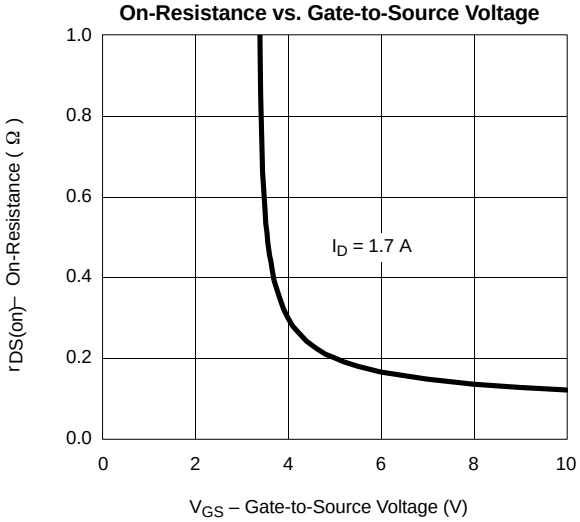


TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

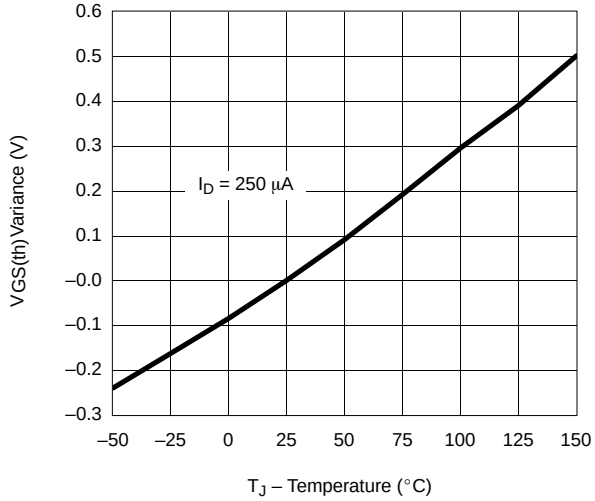
Source-Drain Diode Forward Voltage



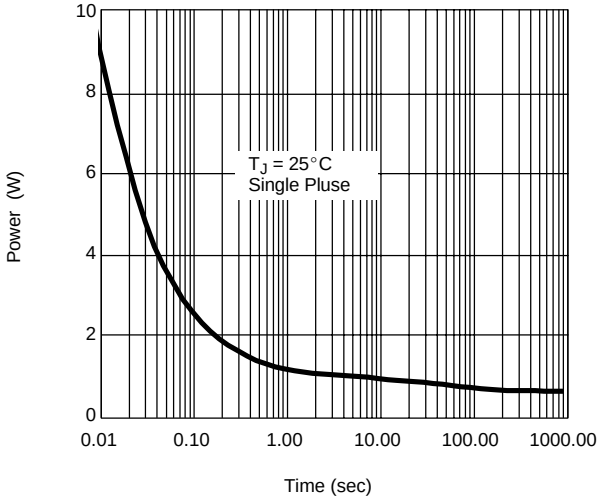
On-Resistance vs. Gate-to-Source Voltage



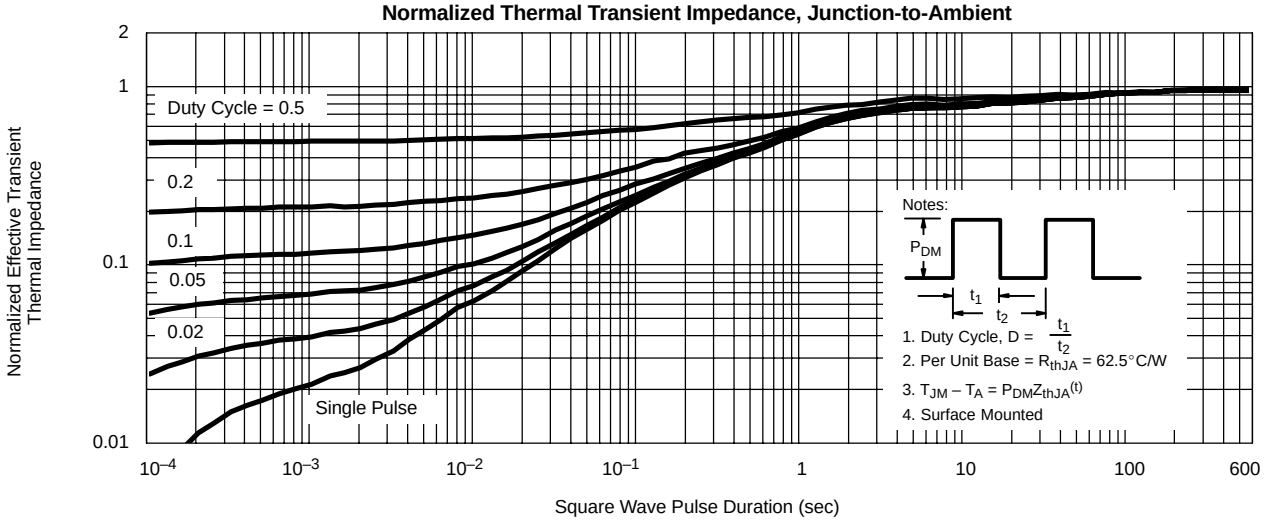
Threshold Voltage



Single Pulse Power



Normalized Thermal Transient Impedance, Junction-to-Ambient



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