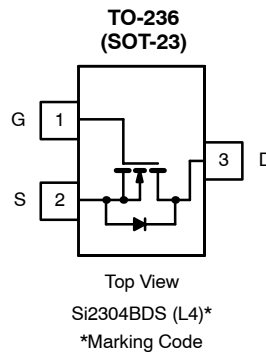




N-Channel 30-V (D-S) MOSFET

PRODUCT SUMMARY		
V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A)
30	0.070 @ $V_{GS} = 10$ V	3.2
	0.105 @ $V_{GS} = 4.5$ V	2.6



Ordering Information: Si2304BDS-T1—E3

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ 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 ($T_J = 150^\circ\text{C}$) ^{a, b}	I_D	$T_A = 25^\circ\text{C}$	3.2	2.6	A
		$T_A = 70^\circ\text{C}$	2.5	2.1	
Pulsed Drain Current	I_{DM}	10			
Continuous Source Current (Diode Conduction) ^{a, b}	I_S	0.9	0.62		
Maximum Power Dissipation ^{a, b}	P_D	$T_A = 25^\circ\text{C}$	1.08	0.75	W
		$T_A = 70^\circ\text{C}$	0.69	0.48	
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55 to 150		$^\circ\text{C}$	

THERMAL RESISTANCE RATINGS					
Parameter	Symbol	Typical	Maximum	Unit	
Maximum Junction-to-Ambient ^a	R_{thJA}	$t \leq 5$ sec	90	115	$^\circ\text{C/W}$
		Steady State	130	166	
Maximum Junction-to-Foot (Drain)	R_{thJF}	60	75		

Notes

- a. Surface Mounted on FR4 Board, $t \leq 5$ sec.
- b. Pulse width limited by maximum junction temperature.
- c. Surface Mounted on FR4 Board.

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

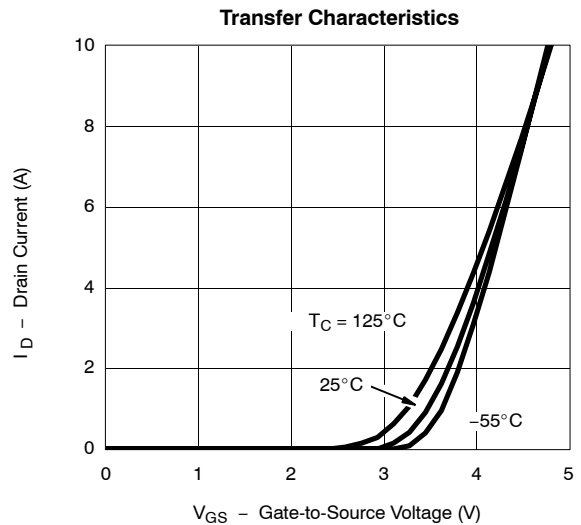
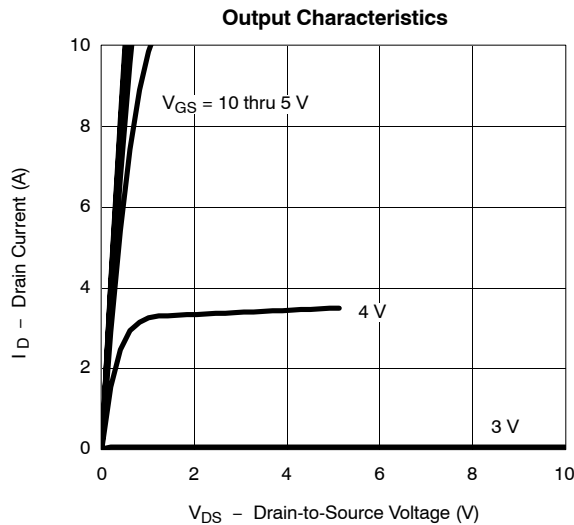


SPECIFICATIONS (T _A = 25 °C UNLESS OTHERWISE NOTED)						
Parameter	Symbol	Test Conditions	Limits			Unit
			Min	Typ	Max	
Static						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0 V, I _D = 250 μA	30			V
Gate-Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250 μA	1.5		3.0	
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ±20 V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 30 V, V _{GS} = 0 V			0.5	μA
		V _{DS} = 30 V, V _{GS} = 0 V, T _J = 55 °C			10	
		V _{DS} = 30 V, V _{GS} = 1.0 V, T _J = 25 °C			1	
On-State Drain Current ^a	I _{D(on)}	V _{DS} ≥ 4.5 V, V _{GS} = 10 V	6			A
Drain-Source On-Resistance ^a	r _{DS(on)}	V _{GS} = 10 V, I _D = 2.5 A		0.055	0.070	Ω
		V _{GS} = 4.5 V, I _D = 2.0 A		0.080	0.105	
Forward Transconductance ^a	g _{fs}	V _{DS} = 4.5 V, I _D = 2.5 A		6.0		S
Diode Forward Voltage	V _{SD}	I _S = 1.25 A, V _{GS} = 0 V		0.8	1.2	V
Dynamic						
Gate Charge	Q _g	V _{DS} = 15 V, V _{GS} = 5 V, I _D = 2.5 A		2.6	4	nC
Total Gate Charge	Q _{gt}	V _{DS} = 15 V, V _{GS} = 10 V, I _D = 2.5 A		4.6	7	
Gate-Source Charge	Q _{gs}			0.8		
Gate-Drain Charge	Q _{gd}			1.15		
Gate Resistance	R _g	f = 1.0 MHz		3.0		Ω
Input Capacitance	C _{iss}	V _{DS} = 15 V, V _{GS} = 0 V, f = 1 MHz		225		pF
Output Capacitance	C _{oss}			50		
Reverse Transfer Capacitance	C _{rss}			28		
Switching						
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		7.5	12	ns
Rise Time	t _r			12.5	20	
Turn-Off Delay Time	t _{d(off)}			19	30	
Fall-Time	t _f			15	25	

Notes

a. Pulse test: PW ≤ 300 μs duty cycle ≤ 2%.

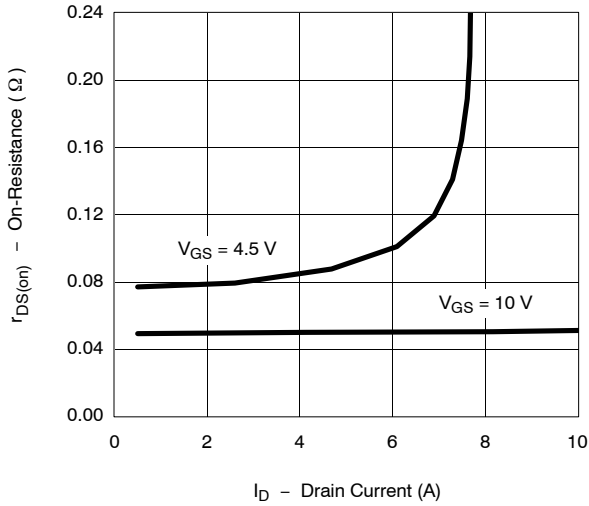
TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)



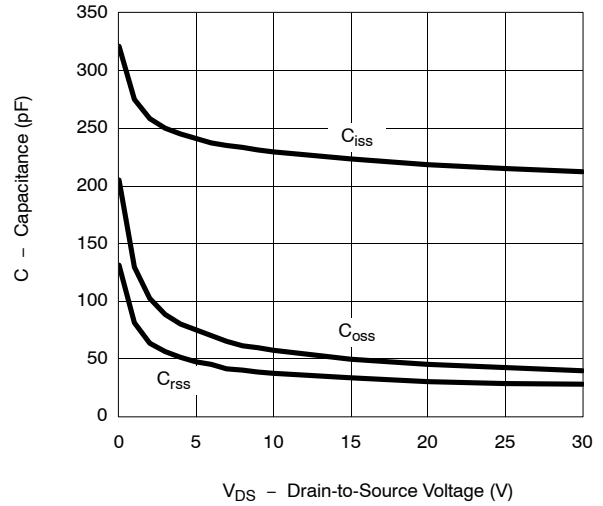


TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)

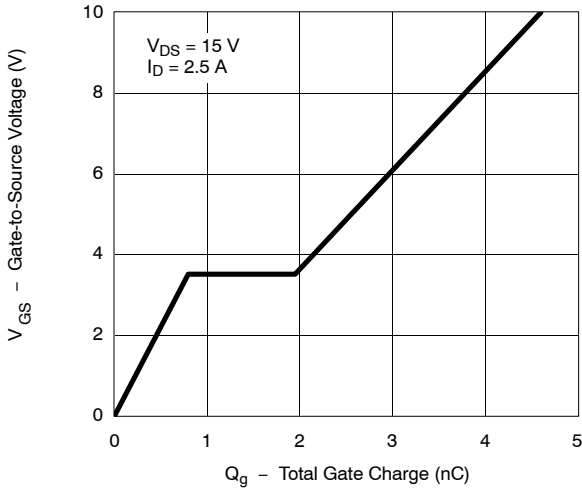
On-Resistance vs. Drain Current



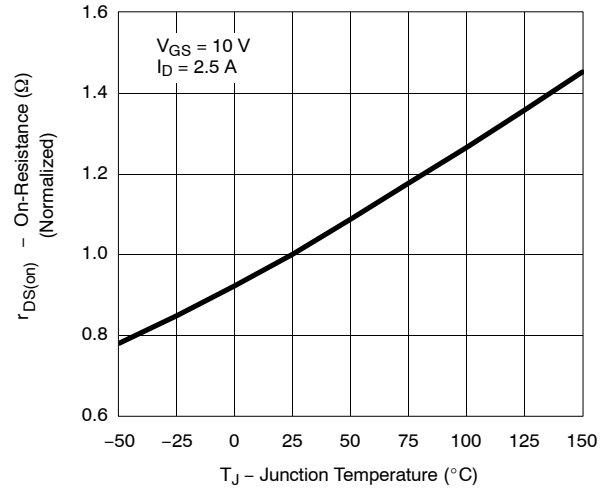
Capacitance



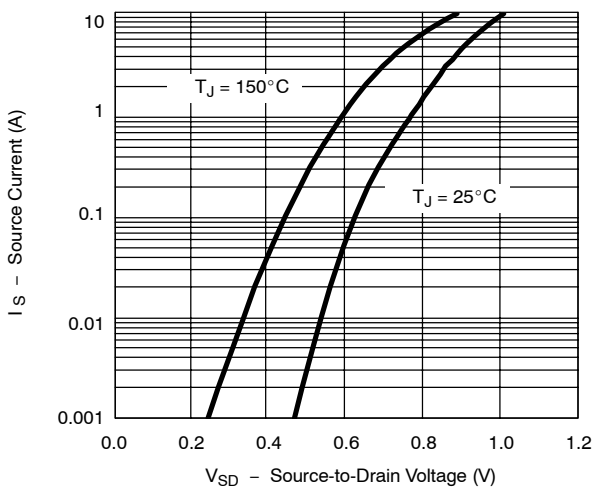
Gate Charge



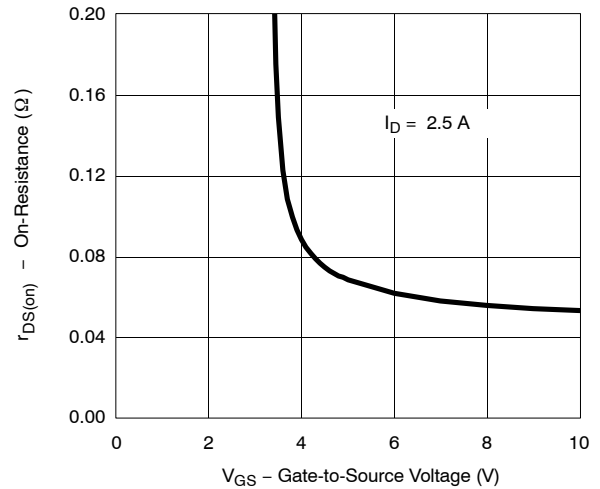
On-Resistance vs. Junction Temperature



Source-Drain Diode Forward Voltage



On-Resistance vs. Gate-to-Source Voltage





TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)

