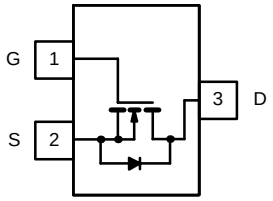
N-Channel 100-V (D-S) MOSFET

PRODUCT SUMMARY		
V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A)
100	0.250 @ V_{GS} = 10 V	1.5

TO-236
(SOT-23)



Top View
Si2328DS (D8)*
*Marking Code

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C UNLESS OTHERWISE NOTED)					
Parameter		**Symbol**	**5 sec**	**Steady State**	**Unit**
Drain-Source Voltage		V_{DS}	100		V
Gate-Source Voltage		V_{GS}	± 20		
Continuous Drain Current (T_J = 150°C)[a]	T_A= 25°C	I_D	1.5	1.15	A
	T_A= 70°C		1.2	0.92	
Pulsed Drain Current[b]		I_{DM}	6		
Avalanche Current[b]	L = 0.1 mH	I_{AS}	6		
Single Avalanche Energy		E_{AS}	1.8		mJ
Continuous Source Current (Diode Conduction)[a]		I_S	0.6		A
Power Dissipation[a]	T_A= 25°C	P_D	1.25	0.73	W
	T_A= 70°C		0.80	0.47	
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[a]	t ≤ 5 sec	R_{thJA}	80	100	°C/W
	Steady State		130	170	
Maximum Junction-to-Foot	Steady State	R_{thJF}	45	55	

Notes
a. Surface Mounted on 1" x 1" FR4 Board.
b. Pulse width limited by maximum junction temperature

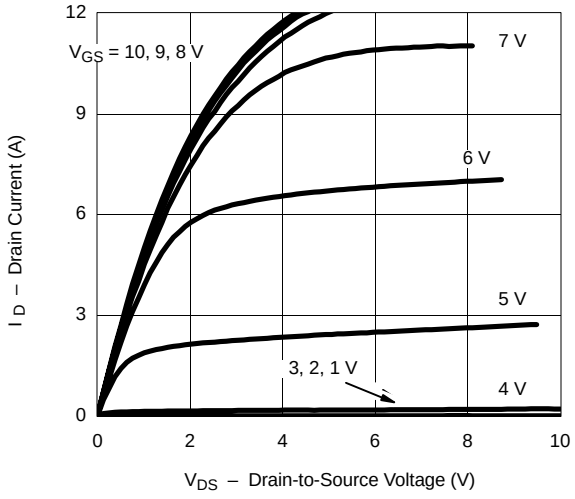
SPECIFICATIONS (T_A = 25°C UNLESS OTHERWISE NOTED)

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 = 1 mA	100			V
Gate-Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250 µA	2			
Gate-Body Leakage	I_{GSS}	V_{DS} = 0 V, V_{GS} = ±20 V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 80 V, V_{GS} = 0 V			1	µA
		V_{DS} = 80 V, V_{GS} = 0 V, T_J = 70°C			75	
On-State Drain Current[a]	$I_{D(on)}$	V_{DS} ≥ 15 V, V_{GS} = 10 V	6			A
Drain-Source On-Resistance[a]	$r_{DS(on)}$	V_{GS} = 10 V, I_D = 1.5 A		0.195	0.250	Ω
Forward Transconductance[a]	g_{fs}	V_{DS} = 15 V, I_D = 1.5 A		4		S
Diode Forward Voltage	V_{SD}	I_S = 1.0 A, V_{GS} = 0 V		0.8	1.2	V
Dynamic[b]						
Total Gate Charge	Q_g	V_{DS} = 50 V, V_{GS} = 10 V, I_D = 1.5 A		3.3	4.0	nC
Gate-Source Charge	Q_{gs}			0.47		
Gate-Drain Charge	Q_{gd}			1.45		
Switching						
Turn-On Delay Time	$t_{d(on)}$	V_{DD} = 50 V, R_L = 33 Ω I_D ≅ 0.2 A, V_{GEN} = 10 V, R_G = 6 Ω		7	11	ns
Rise Time	t_r			11	17	
Turn-Off Delay Time	$t_{d(off)}$			9	15	
Fall-Time	t_f			10	15	
Source-Drain Reverse Recovery Time	t_{rr}	I_F = 1.5 A, di/dt = 100 A/µs		50	100	ns

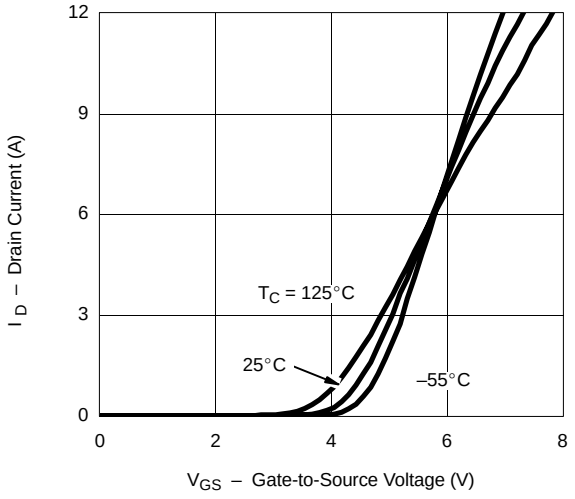
Notes
a. Pulse test: PW ≤ 300 µs duty cycle ≤ 2%.
b. Guaranteed by design, not subject to production testing.

TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

Output Characteristics

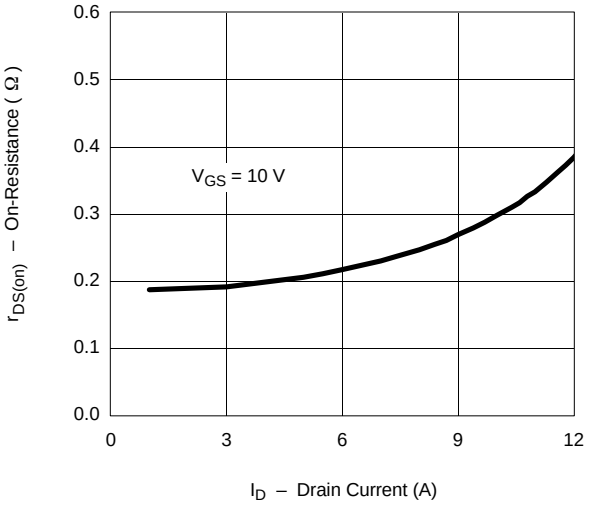


Transfer Characteristics

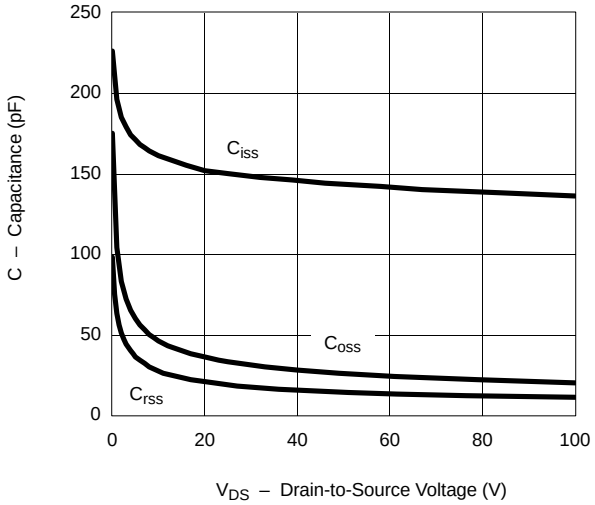


TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

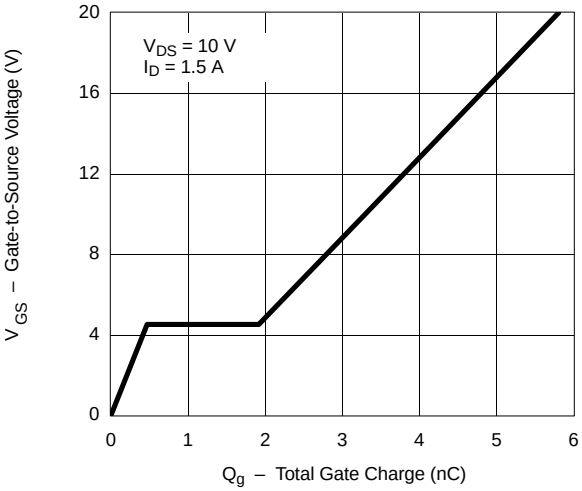
On-Resistance vs. Drain Current



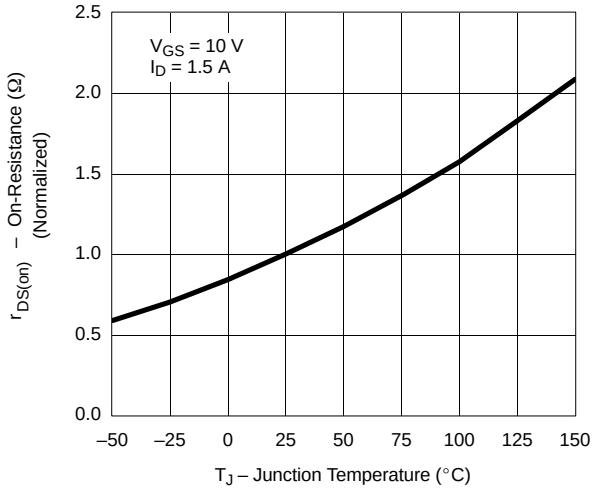
Capacitance



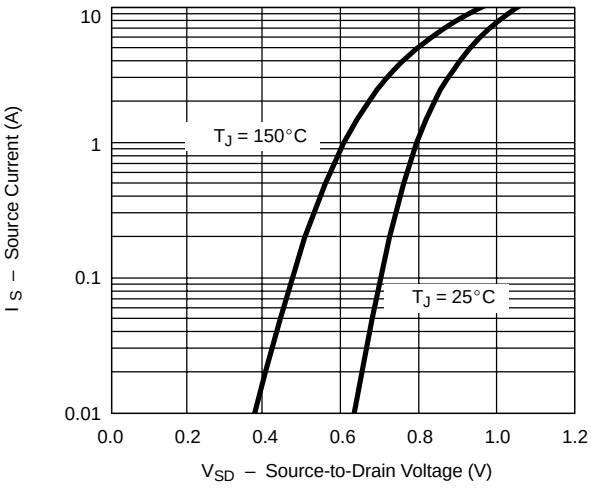
Gate Charge



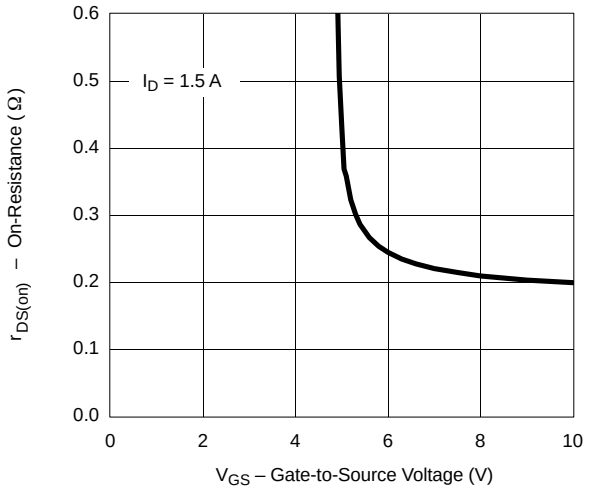
On-Resistance vs. Junction Temperature



Source-Drain Diode Forward Voltage

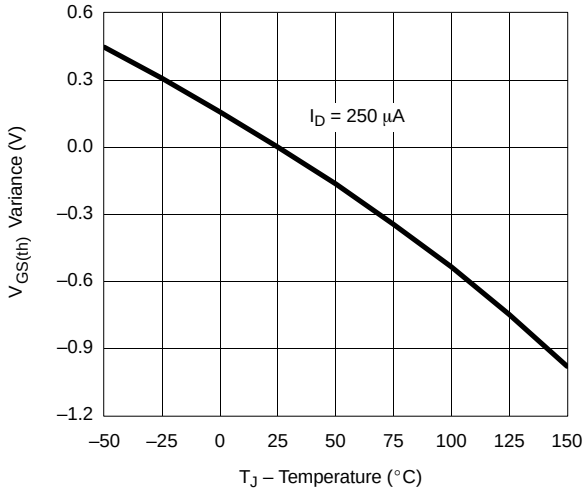


On-Resistance vs. Gate-to-Source Voltage

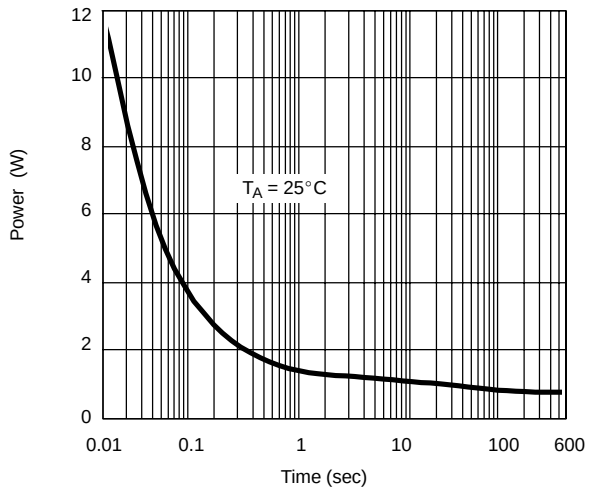


TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

Threshold Voltage



Single Pulse Power



Normalized Thermal Transient Impedance, Junction-to-Ambient