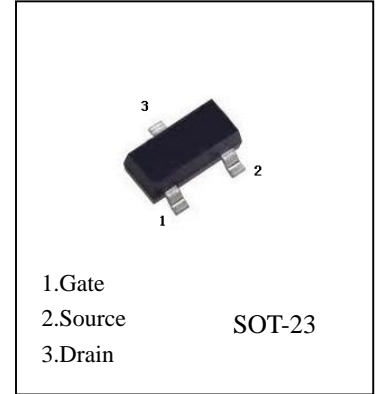
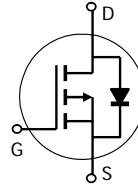


Plastic-Encapsulate Mosfets

P-Channel MOSFET

PRODUCT SUMMARY

V _{DS} (V)	r _{DS(on)} (Ω)	I _D (A)
-60	0.340 @ V _{GS} = -10 V	- 1.25
	0.550 @ V _{GS} = -4.5 V	- 1



Absolute Maximum Ratings (TA=25oC, unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V _{DS}	-60	V
Gate-Source Voltage	V _{GS}	± 20	
Continuous Drain Current (T _J = 150°C) ^{a, b}	I _D	T _A = 25°C	-1.25
		T _A = 100°C	-0.85
Pulsed Drain Current	I _{DM}	-8	A
Avalanche Current	I _{AS}	-5	
Maximum Power Dissipation ^{a, b}	P _D	T _A = 25°C	1.25
		T _A = 70°C	0.8
Operating Junction and Storage Temperature Range	T _J , T _{stg}	-55 to 150	°C

Parameter	Symbol	Typical	Maximum	Unit
Maximum Junction-to-Ambient ^a	R _{thJA}	t ≤ 5 sec	100	°C/W
		Steady State	130	
Maximum Junction-to-Lead ^a	R _{thJL}	45	60	

Notes

- a. Surface Mounted on FR4 Board.
- b. t ≤ 5 sec.

SI2309DS

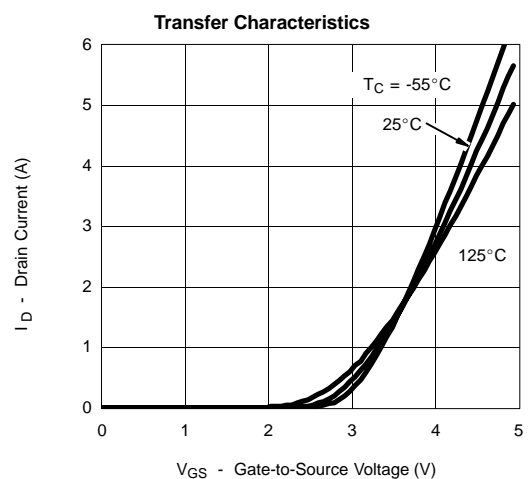
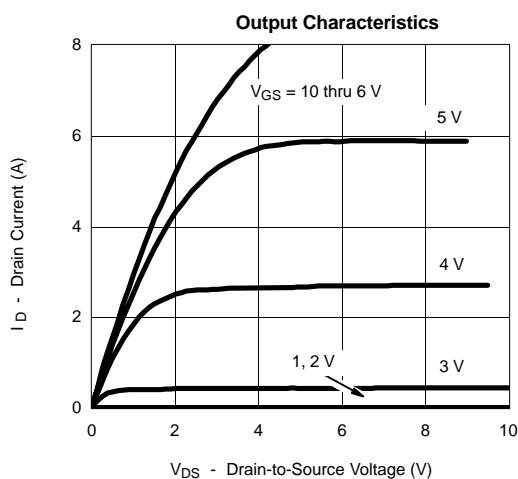
Electrical Characteristics (TA=25°C, unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{DS} = 0\text{ V}, I_D = -250\ \mu\text{A}$	-60			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\ \mu\text{A}$	-1			
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0\text{ V}, V_{GS} = \pm 20\text{ V}$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = -48\text{ V}, V_{GS} = 0\text{ V}$			-1	μA
		$V_{DS} = -48\text{ V}, V_{GS} = 0\text{ V}, T_J = 125^\circ\text{C}$			-50	
On-State Drain Current ^a	$I_{D(on)}$	$V_{DS} \geq -4.5\text{ V}, V_{GS} = -10\text{ V}$	-6			A
Drain-Source On-State Resistance ^a	$r_{DS(on)}$	$V_{GS} = -10\text{ V}, I_D = -1.25\text{ A}$		0.275	0.340	Ω
		$V_{GS} = -4.5\text{ V}, I_D = -1\text{ A}$		0.406	0.550	
Forward Transconductance ^a	g_{fs}	$V_{DS} = -4.5\text{ V}, I_D = -1\text{ A}$		1.9		S
Dynamic^b						
Total Gate Charge	Q_g	$V_{DS} = -30\text{ V}, V_{GS} = -10\text{ V}, I_D = -1.25\text{ A}$		5.4	12	nC
Gate-Source Charge	Q_{gs}			1.15		
Gate-Drain Charge	Q_{gd}			0.92		
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = -30\text{ V}, R_L = 30\ \Omega$ $I_D \cong -1\text{ A}, V_{GEN} = -4.5\text{ V}, R_G = 6\ \Omega$		10.5	20	ns
Rise Time	t_r			11.5	20	
Turn-Off Delay Time	$t_{d(off)}$			15.5	30	
Fall Time	t_f			7.5	15	
Source-Drain Rating Characteristics^b						
Continuous Current	I_S				-1.25	A
Pulsed Current	I_{SM}				-8	
Diode Forward Voltage ^a	V_{SD}	$I_S = -1.25\text{ A}, V_{GS} = 0\text{ V}$		-0.82	-1.2	V
Source-Drain Reverse Recovery Time	t_{rr}	$I_F = -1.25\text{ A}, di/dt = 100\text{ A}/\mu\text{s}$		30	55	ns

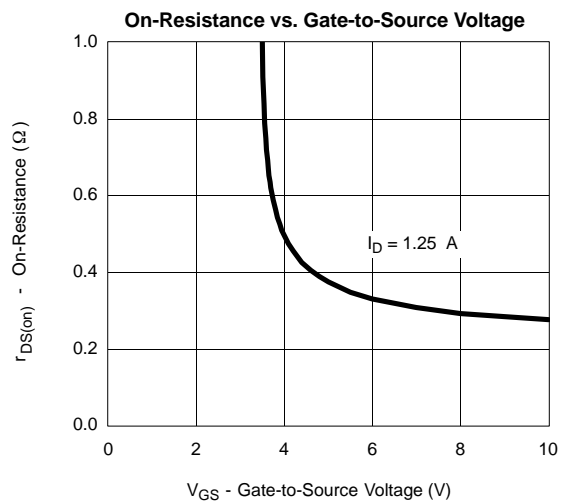
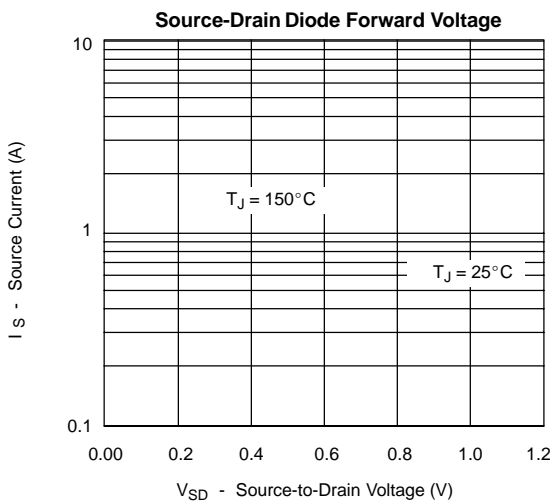
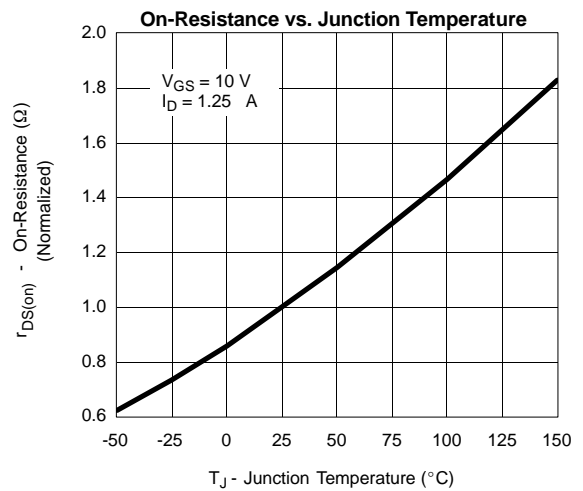
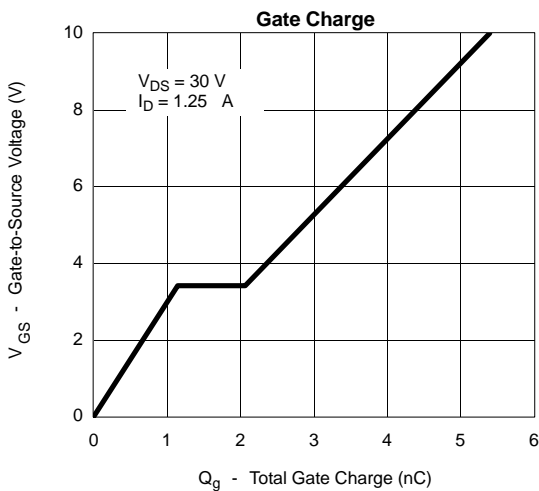
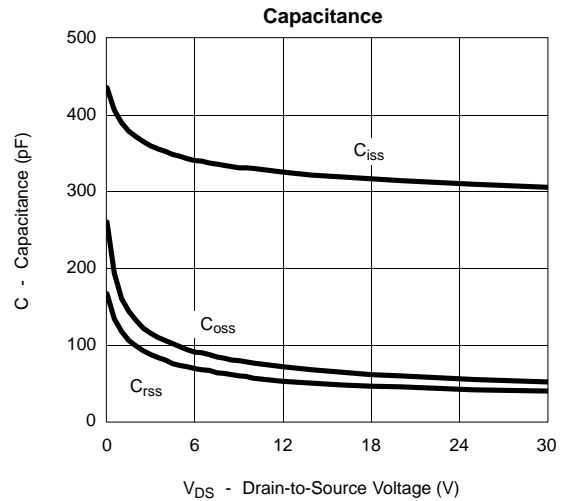
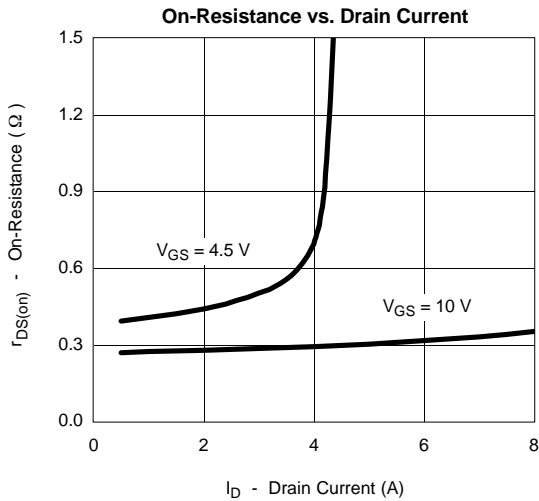
Notes

- a. Pulse test; pulse width $\leq 300\ \mu\text{s}$, duty cycle $\leq 2\%$.
- b. Guaranteed by design, not subject to production testing.

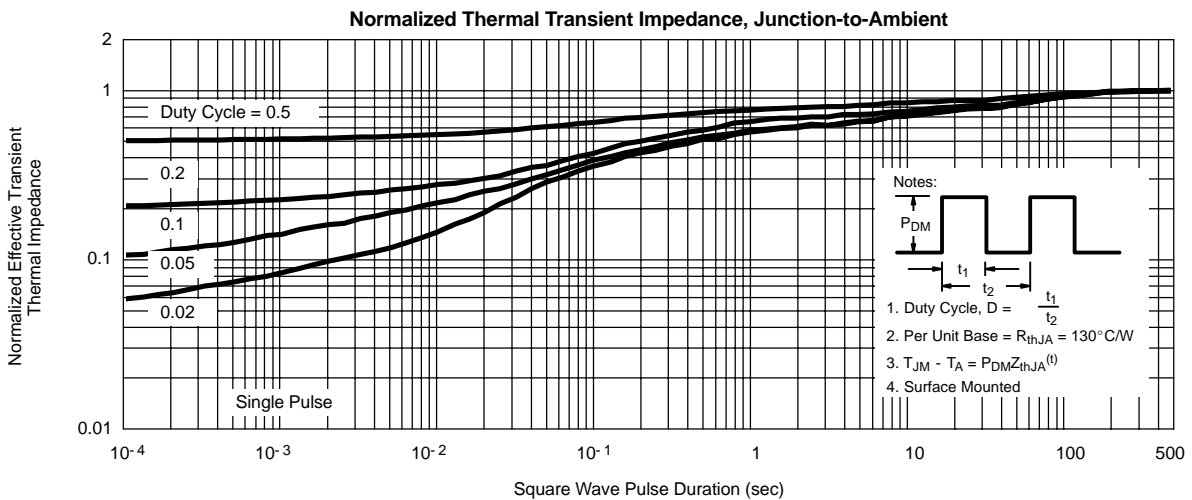
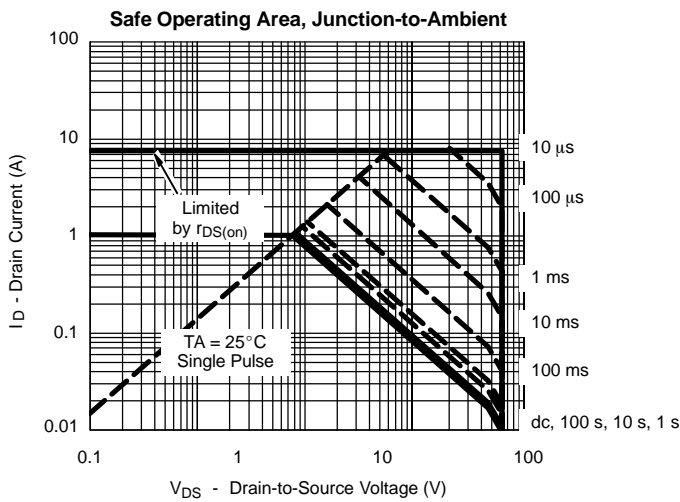
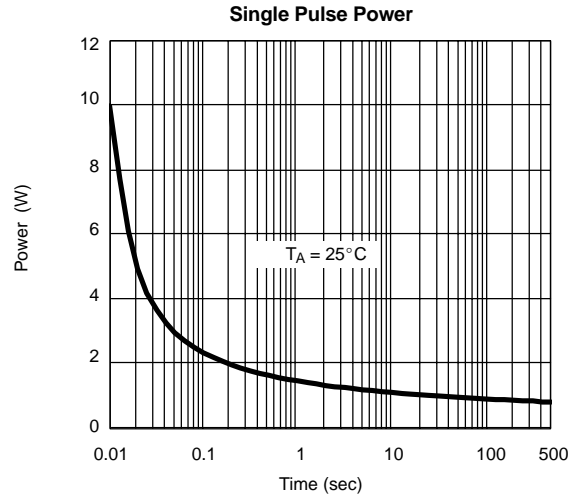
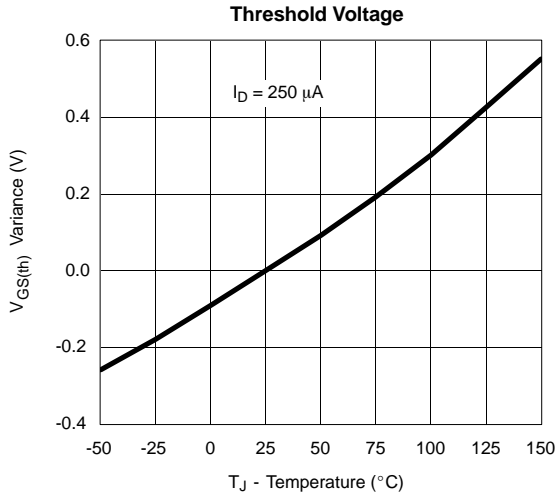
Typical Characteristics



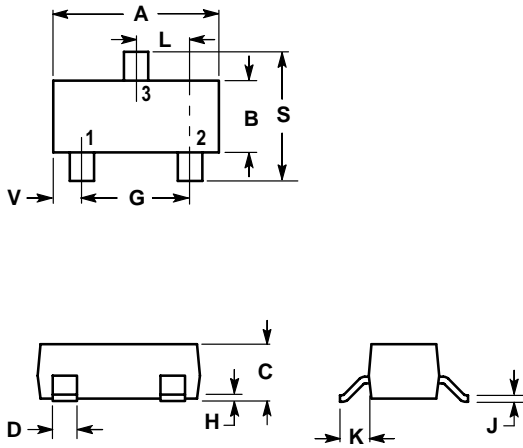
SI2309DS Typical Characteristics



SI2309DS Typical Characteristics



SOT-23



NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.1102	0.1197	2.80	3.04
B	0.0472	0.0551	1.20	1.40
C	0.0350	0.0440	0.89	1.11
D	0.0150	0.0200	0.37	0.50
G	0.0701	0.0807	1.78	2.04
H	0.0005	0.0040	0.013	0.100
J	0.0034	0.0070	0.085	0.177
K	0.0140	0.0285	0.35	0.69
L	0.0350	0.0401	0.89	1.02
S	0.0830	0.1039	2.10	2.64
V	0.0177	0.0236	0.45	0.60

