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Si2392ADS-T1-GE3
N-Channel 100 V (D-S) MOSFET

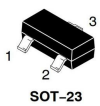
PRODUCT SUMMARY			
V_{DS} (V)	$R_{DS(on)}$ (Ω) MAX.	I_D (A) [a]	Q_g (TYP.)
100	0.126 at V_{GS} = 10 V	3.1	2.9 nC
	0.144 at V_{GS} = 6 V	2.9	
	0.189 at V_{GS} = 4.5 V	2.6	

FEATURES

- TrenchFET® power MOSFET
- 100 % R_g and UIS tested

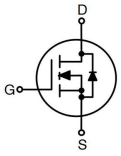
APPLICATIONS

- DC/DC converters / boost converters
- Load switch
- LED backlighting in LCD TVs
- Power management for mobile computing



SOT–23

1 – Gate
2 – Source
3 – Drain



Ordering Information:
Si2392ADS-T1-GE3 (Lead (Pb)-free and Halogen-free)

ABSOLUTE MAXIMUM RATINGS (T_A = 25 °C, unless otherwise noted)				
PARAMETER		SYMBOL	LIMIT	UNIT
Drain-Source Voltage		V_{DS}	100	V
Gate-Source Voltage		V_{GS}	± 20	
Continuous Drain Current (T_J = 150 °C)	T_C = 25 °C	I_D	3.1	A
	T_C = 70 °C		2.5	
	T_A = 25 °C		2.2 [b, c]	
	T_A = 70 °C		1.8 [b, c]	
Pulsed Drain Current (t = 300 µs)		I_{DM}	8	
Continuous Source-Drain Diode Current	T_C = 25 °C	I_S	2.1	
	T_A = 25 °C		1 [b, c]	
Single Pulse Avalanche Current	L = 0.1 mH	I_{AS}	3	
Single Pulse Avalanche Energy		E_{AS}	0.45	mJ
Maximum Power Dissipation	T_C = 25 °C	P_D	2.5	W
	T_C = 70 °C		1.6	
	T_A = 25 °C		1.25 [b, c]	
	T_A = 70 °C		0.8 [b, c]	
Operating Junction and Storage Temperature Range		T_J, T_{stg}	-55 to 150	°C

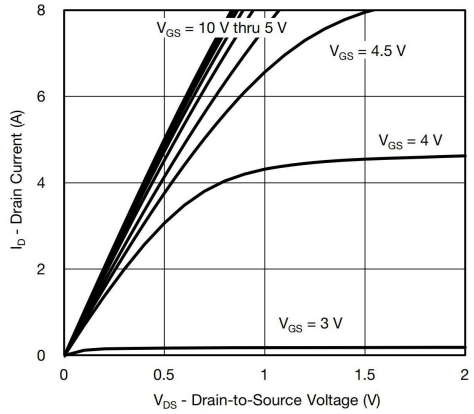
THERMAL RESISTANCE RATINGS					
PARAMETER		SYMBOL	TYPICAL	MAXIMUM	UNIT
Maximum Junction-to-Ambient [b, d]	t ≤ 5 s	R_{thJA}	75	100	°C/W
Maximum Junction-to-Foot (Drain)	Steady State	R_{thJF}	40	50	

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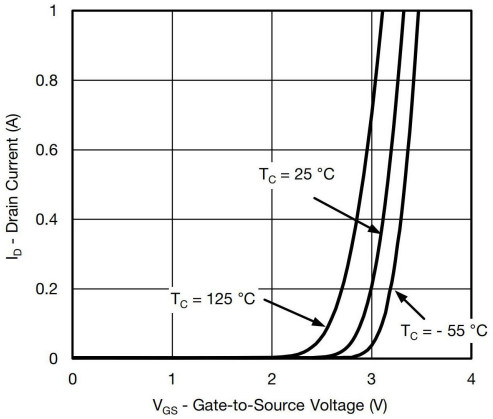
SPECIFICATIONS (T_J = 25 °C, unless otherwise noted)						
PARAMETER	**SYMBOL**	**TEST CONDITIONS**	**MIN.**	**TYP.**	**MAX.**	**UNIT**
Static						
Drain-Source Breakdown Voltage	V_{DS}	V_{GS} = 0 V, I_D = 250 µA	100	-	-	V
V_{DS} Temperature Coefficient	$\Delta V_{DS}/T_J$	I_D = 250 µA	-	59	-	mV/°C
$V_{GS(th)}$ Temperature Coefficient	$\Delta V_{GS(th)}/T_J$		-	-4.8	-	
Gate-Source Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250 µA	1.2	-	3	V
Gate-Source Leakage	I_{GSS}	V_{DS} = 0 V, V_{GS} = ± 20 V	-	-	± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 100 V, V_{GS} = 0 V	-	-	1	µA
		V_{DS} = 100 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	5	-	-	A
Drain-Source On-State Resistance [a]	$R_{DS(on)}$	V_{GS} = 10 V, I_D = 2 A	-	0.102	0.126	Ω
		V_{GS} = 6 V, I_D = 1 A	-	0.120	0.144	
		V_{GS} = 4.5 V, I_D = 1 A	-	0.135	0.189	
Forward Transconductance [a]	g_{fs}	V_{DS} = 20 V, I_D = 2 A	-	5	-	S
Dynamic [b]						
Input Capacitance	C_{iss}	V_{DS} = 50 V, V_{GS} = 0 V, f = 1 MHz	-	196	-	pF
Output Capacitance	C_{oss}		-	67	-	
Reverse Transfer Capacitance	C_{rss}		-	14	-	
Total Gate Charge	Q_g	V_{DS} = 50 V, V_{GS} = 10 V, I_D = 2.2 A	-	5.2	10.4	nC
		V_{DS} = 50 V, V_{GS} = 4.5 V, I_D = 2.2 A	-	2.9	5.8	
Gate-Source Charge	Q_{gs}		-	1	-	
Gate-Drain Charge	Q_{gd}		-	1.4	-	
Gate Resistance	R_g	f = 1 MHz	0.9	4.3	8.6	Ω
Turn-On Delay Time	$t_{d(on)}$	V_{DD} = 50 V, R_L = 27.7 Ω I_D = 1.8 A, V_{GEN} = 4.5 V, R_g = 1 Ω	-	40	60	ns
Rise Time	t_r		-	68	102	
Turn-Off Delay Time	$t_{d(off)}$		-	14	21	
Fall Time	t_f		-	20	30	
Turn-On Delay Time	$t_{d(on)}$	V_{DD} = 50 V, R_L = 27.7 Ω I_D = 1.8 A, V_{GEN} = 10 V, R_g = 1 Ω	-	8	16	
Rise Time	t_r		-	10	20	
Turn-Off Delay Time	$t_{d(off)}$		-	10	20	
Fall Time	t_f		-	7	14	
Drain-Source Body Diode Characteristics						
Continuous Source-Drain Diode Current	I_S	T_C = 25 °C	-	-	2.1	A
Pulse Diode Forward Current [a]	I_{SM}		-	-	8	
Body Diode Voltage	V_{SD}	I_S = 1.8 A	-	0.8	1.2	V
Body Diode Reverse Recovery Time	t_{rr}	I_F = 1.8 A, dI/dt = 100 A/µs, T_J = 25 °C	-	23	35	ns
Body Diode Reverse Recovery Charge	Q_{rr}		-	21	32	nC
Reverse Recovery Fall Time	t_a		-	17	-	ns
Reverse Recovery Rise Time	t_b		-	6	-	

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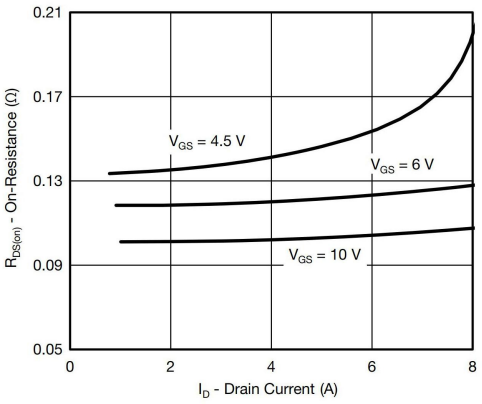
TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



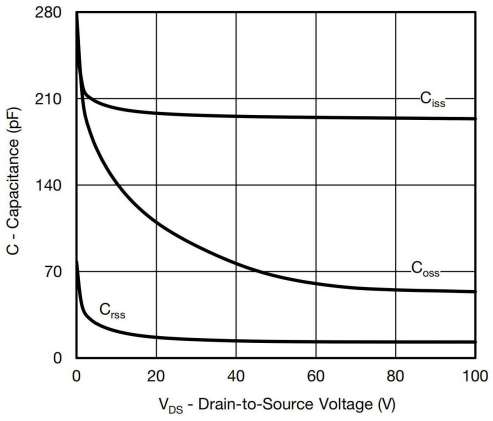
Output Characteristics



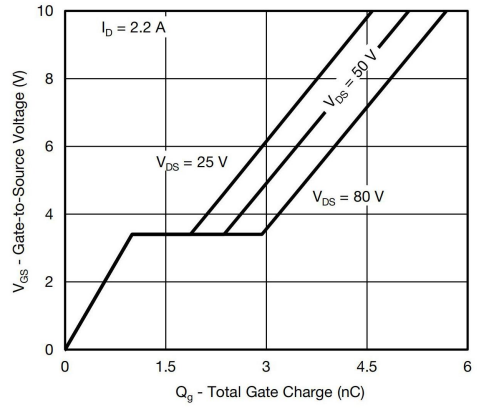
Transfer Characteristics

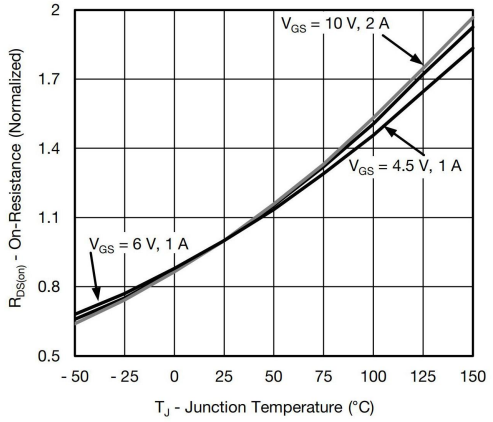


On-Resistance vs. Drain Current and Gate Voltage



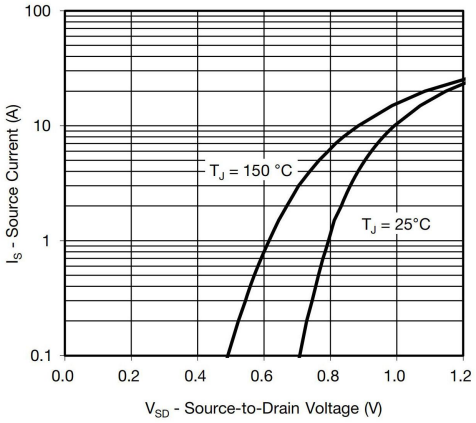
Capacitance



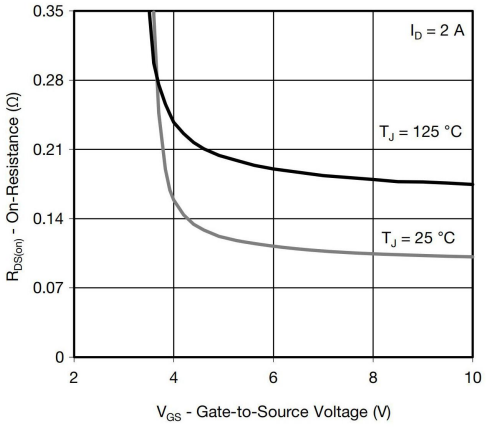


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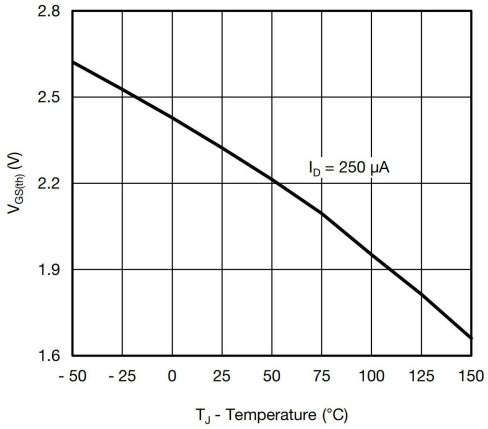
TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



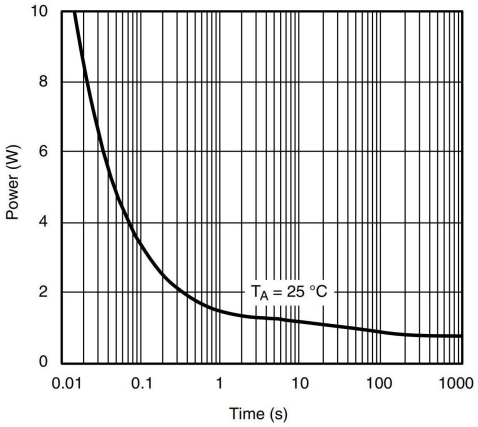
Source-Drain Diode Forward Voltage



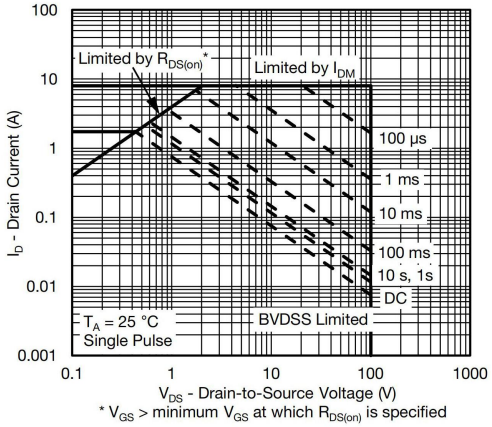
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage

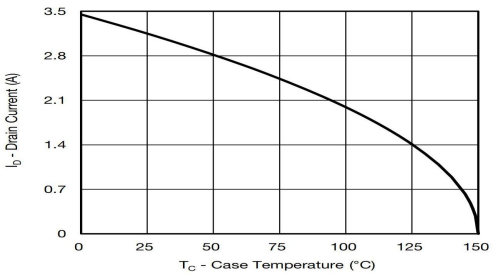


Single Pulse Power

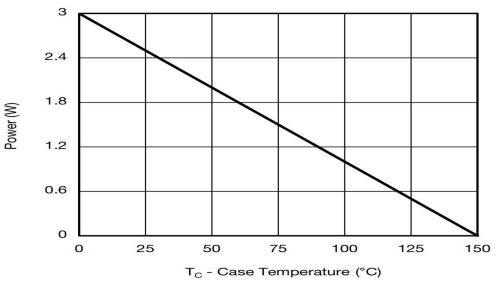


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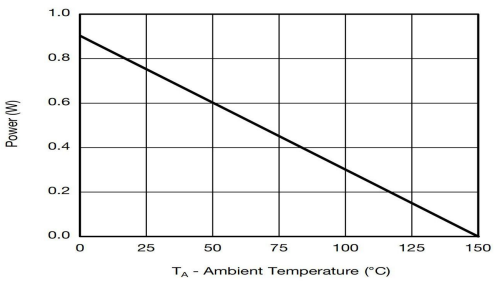
TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



Current Derating*

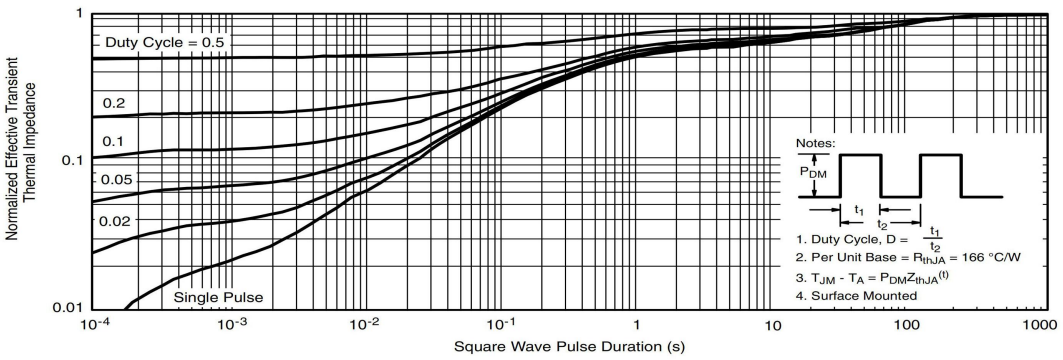


Power, Junction-to-Foot

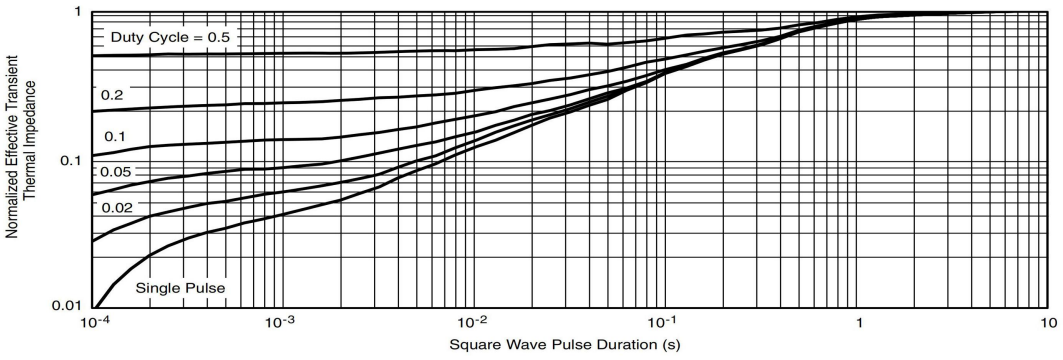


Power, Junction-to-Ambient

TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



Normalized Thermal Transient Impedance, Junction-to-Ambient



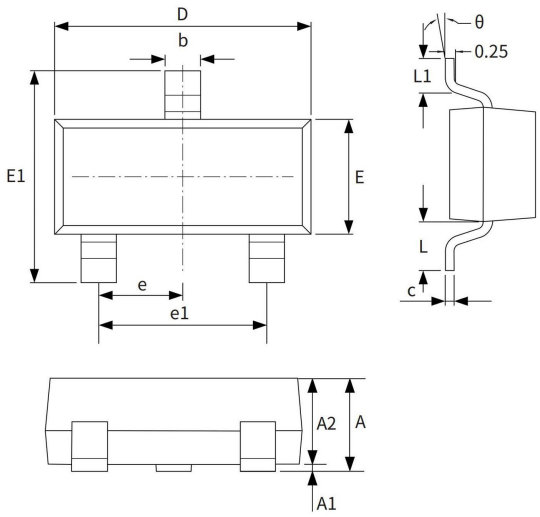
Normalized Thermal Transient Impedance, Junction-to-Foot

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Ordering Information

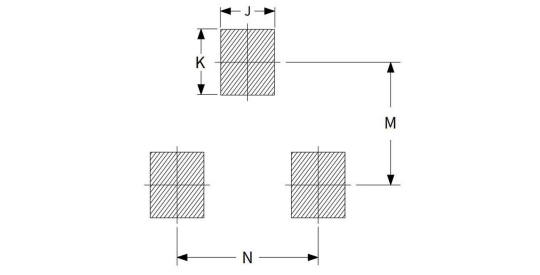
PACKAGE	PACKAGE CODE	UNIT WEIGHT(g)	REEL(pcs)	BOX(pcs)	CARTON(pcs)	DELIVERY MODE
SOT-23	R1	0.008	3000	30000	240000	7''

Package Outline Dimensions (SOT-23)



Symbol	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	0.90	1.15	0.035	0.045
A1	-	0.10	-	0.004
A2	0.90	1.05	0.035	0.041
b	0.30	0.50	0.012	0.020
c	0.10	0.20	0.004	0.008
D	2.80	3.00	0.110	0.118
E	1.20	1.40	0.047	0.055
E1	2.25	2.55	0.089	0.100
e	0.950TYP		0.037TYP	
e1	1.80	2.00	0.071	0.079
L	0.550REF		0.022REF	
L1	0.30	0.50	0.012	0.020
θ	-	8°	-	8°

Suggested Pad Layout



Symbol	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
J	0.75	0.85	0.030	0.033
K	0.85	0.95	0.033	0.037
M	1.95	2.05	0.077	0.081
N	1.85	1.95	0.073	0.077