www.omseni.com

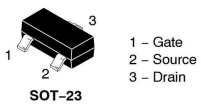
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Si2315BDS-T1-GE3
P-Channel 1.8-V (G-S) MOSFET

PRODUCT SUMMARY		
V_{DS} (V)	$R_{DS(on)}$ (Ω)	I_D (A)
- 12	0.050 at V_{GS} = - 4.5 V	- 3.85
	0.065 at V_{GS} = - 2.5 V	- 3.4
	0.100 at V_{GS} = - 1.8V	- 2.7

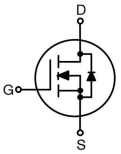
FEATURES

- **Halogen-free Option Available**
- TrenchFET® Power MOSFETs: 1.8 V Rated



SOT–23

1 – Gate
2 – Source
3 – Drain



Ordering Information: Si2315BDS-T1-E3 (Lead (Pb)-free)
Si2315BDS-T1-GE3 (Lead (Pb)-free and Halogen-free)

ABSOLUTE MAXIMUM RATINGS T_A = 25 °C, unless otherwise noted					
Parameter		**Symbol**	**5 s**	**Steady State**	**Unit**
Drain-Source Voltage		V_{DS}	- 12		V
Gate-Source Voltage		V_{GS}	± 8		
Continuous Drain Current (T_J = 150 °C)[a]	T_A = 25 °C	I_D	- 3.85	- 3.0	A
	T_A = 70 °C		- 3.0	- 2.45	
Pulsed Drain Current[a]		I_{DM}	- 12		
Continuous Source Current (Diode Conduction)[a]		I_S	- 1.0	- 0.62	
Power Dissipation[a]	T_A = 25 °C	P_D	1.19	0.75	W
	T_A = 70 °C		0.76	0.48	
Operating Junction and Storage Temperature Range		T_J, T_{stg}	- 55 to 150		°C

THERMAL RESISTANCE RATINGS					
Parameter		**Symbol**	**Typ.**	**Max.**	**Unit**
Maximum Junction-to-Ambient[a]	t ≤ 5 s	R_{thJA}	85	105	°C/W
	Steady State		130	166	
Maximum Junction-to-Foot (Drain)	Steady State	R_{thJF}	60	75	

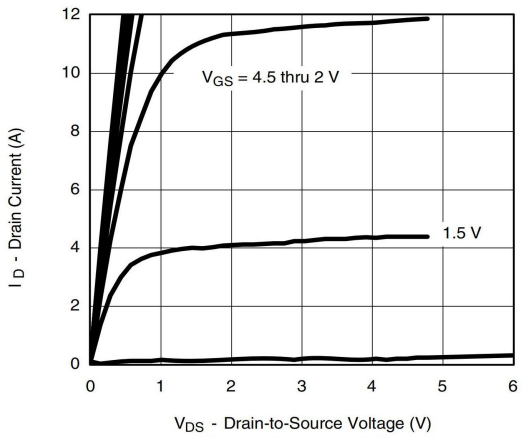
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SPECIFICATIONS T_J = 25 °C, unless otherwise noted						
Parameter	**Symbol**	**Test Conditions**	**Limits**			**Unit**
			Min.	**Typ.**	**Max.**	
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0 V, I_D = - 10 µA	- 12			V
Gate-Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = - 250 µA	- 0.45		- 0.90	
Gate-Body Leakage	I_{GSS}	V_{DS} = 0 V, V_{GS} = ± 8 V			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = - 12 V, V_{GS} = 0 V			- 1	µA
		V_{DS} = - 12 V, V_{GS} = 0 V, T_J = 55 °C			- 10	
On-State Drain Current[a]	$I_{D(on)}$	$V_{DS} \leq$ - 5 V, V_{GS} = - 4.5 V	- 6			A
		$V_{DS} \leq$ - 5 V, V_{GS} = - 2.5 V	- 3			
Drain-Source On Resistance[a]	$R_{DS(on)}$	V_{GS} = - 4.5 V, I_D = - 3.85 A		0.040	0.050	Ω
		V_{GS} = - 2.5 V, I_D = - 3.4 A		0.050	0.065	
		V_{GS} = - 1.8 V, I_D = - 2.7 A		0.071	0.100	
Forward Transconductance[a]	g_{fs}	V_{DS} = - 5 V, I_D = - 3.85 A		7		S
Diode Forward Voltage[a]	V_{SD}	I_S = - 1.6 A, V_{GS} = 0 V			- 1.2	V
Dynamic[b]						
Total Gate Charge	Q_g	V_{DS} = - 6 V, V_{GS} = - 4.5 V $I_D \cong$ - 3.85 A		8	15	nC
Gate-Source Charge	Q_{gs}			1.1		
Gate-Drain Charge	Q_{gd}			2.3		
Input Capacitance	C_{iss}	V_{DS} = - 6 V, V_{GS} = 0 V, f = 1 MHz		715		pF
Output Capacitance	C_{oss}			275		
Reverse Transfer Capacitance	C_{rss}			200		
Switching[b]						
Turn-On Time	$t_{d(on)}$	V_{DD} = - 6 V, R_L = 6 Ω $I_D \cong$ - 1.0 A, V_{GEN} = - 4.5 V R_G = 6 Ω		15	20	ns
	t_r			35	50	
Turn-Off Time	$t_{d(off)}$			50	70	
	t_f			50	75	

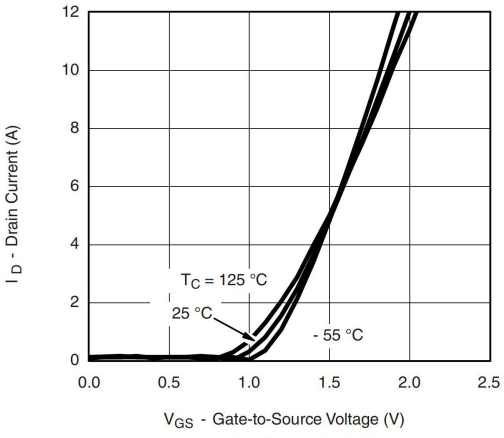
Notes:
a. For DESIGN AID ONLY, not subject to production testing.
b. Pulse test: PW ≤ 300 µs duty cycle ≤ 2 %.
c. Switching time is essentially independent of operating temperature.

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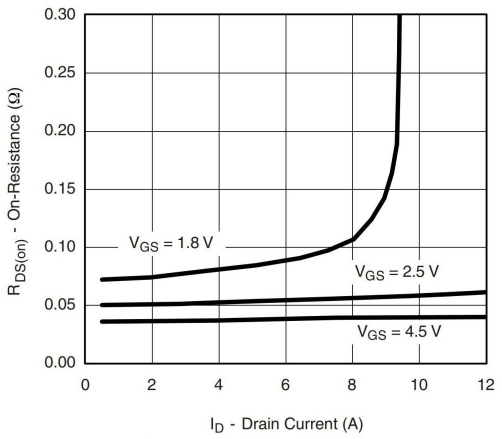
TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted



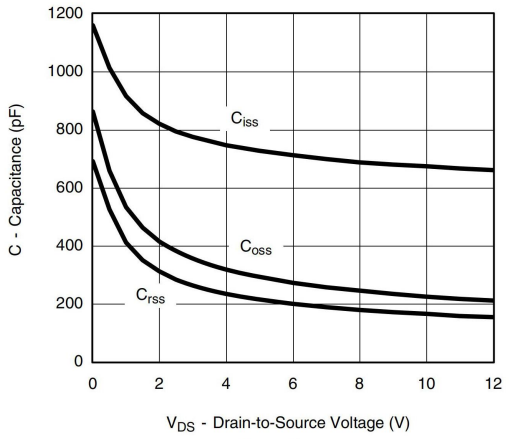
Output Characteristics



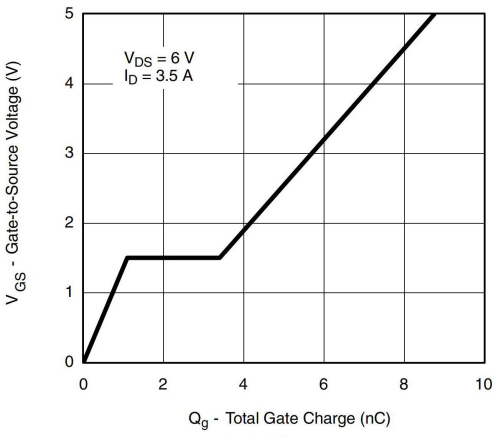
Transfer Characteristics



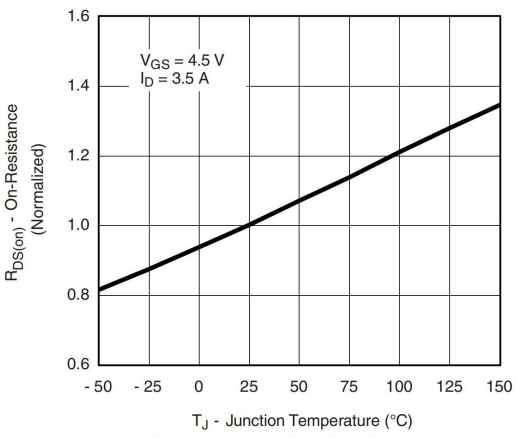
On-Resistance vs. Drain Current



Capacitance



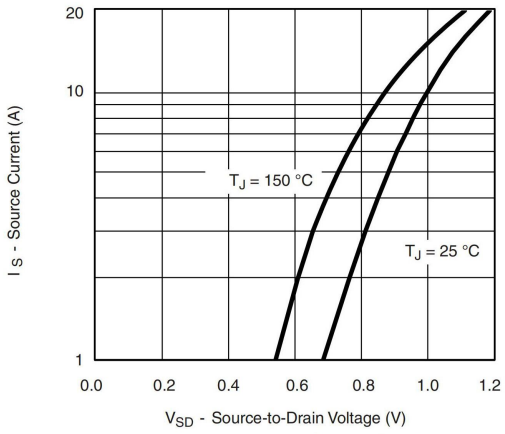
Gate Charge



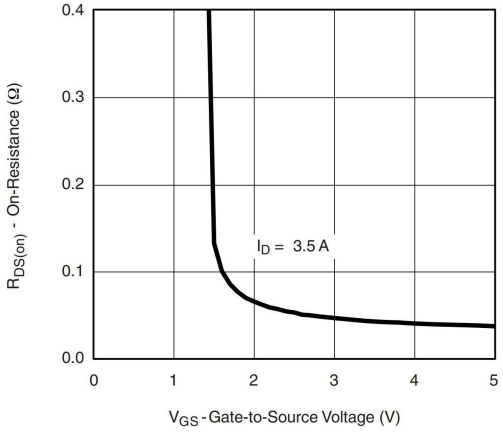
On-Resistance vs. Junction Temperature

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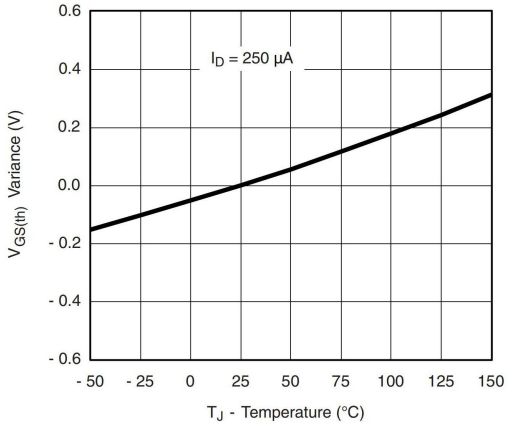
TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted



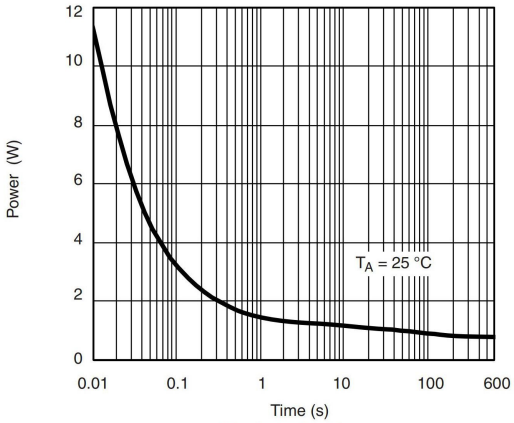
Source-Drain Diode Forward Voltage



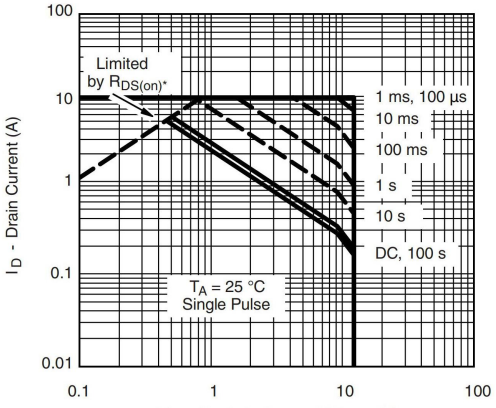
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage



Single Pulse Power

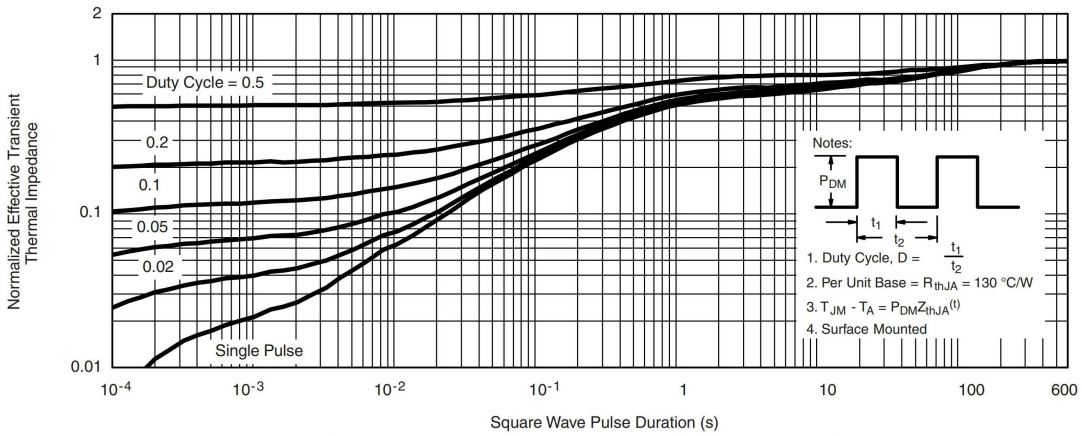


* V_{GS} > minimum V_{GS} at which $R_{DS(on)}$ is specified

Safe Operating Area

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TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted



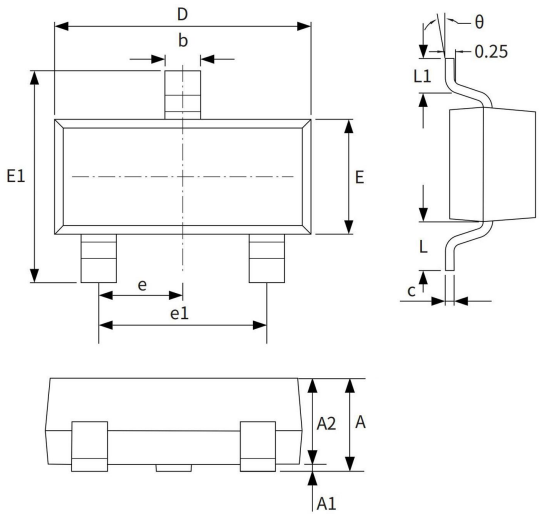
Normalized Thermal Transient Impedance, Junction-to-Ambient

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Ordering Information

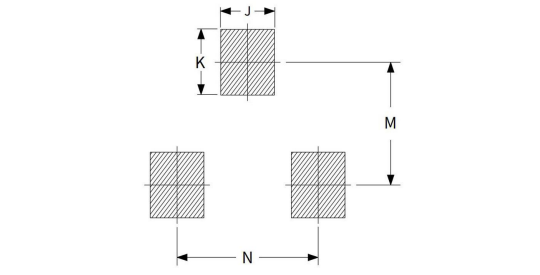
PACKAGE	PACKAGE CODE	UNIT WEIGHT(g)	REEL(pcs)	BOX(pcs)	CARTON(pcs)	DELIVERY MODE
SOT-23	R1	0.008	3000	30000	240000	7''

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