



Si2312BDS vs. Si2312DS

Description: N-Channel, 20 V (D-S) MOSFET

Package: SOT-23

Pin Out: Identical

Part Number Replacements:

Si2312BDS-T1-E3 Replaces Si2312DS-T1-E3

Si2312BDS-T1-E3 Replaces Si2312DS-T1

ABSOLUTE MAXIMUM RATINGS $T_A = 25\text{ }^\circ\text{C}$, unless otherwise noted					
Parameter	Symbol	Si2312BDS	Si2312DS	Unit	
Drain-Source Voltage	V_{DS}	20	20	V	
Gate-Source Voltage	V_{GS}	± 8	± 8		
Continuous Drain Current	$T_A = 25\text{ }^\circ\text{C}$	I_D	5.0	4.9	A
	$T_A = 70\text{ }^\circ\text{C}$		4.0	3.9	
Pulsed Drain Current	I_{DM}	15	15		
Avalanche Current	I_{AS}	13	15		
Continuous Source Current (MOSFET Diode Conduction)	I_S	1.0	1.0		
Power Dissipation	$T_A = 25\text{ }^\circ\text{C}$	P_D	1.25	1.25	
	$T_A = 70\text{ }^\circ\text{C}$		0.8	0.8	
Operating Junction and Storage Temperature Range	T_j and T_{stg}	- 55 to 150	- 55 to 150	$^\circ\text{C}$	
Maximum Junction-to-Ambient	R_{thJA}	100	100	$^\circ\text{C/W}$	

SPECIFICATIONS $T_J = 25\text{ }^\circ\text{C}$, unless otherwise noted								
Parameter	Symbol	Si2312BDS			Si2312DS			Unit
		Min	Typ	Max	Min	Typ	Max	
Static								
Gate-Threshold Voltage	$V_{G(th)}$	0.45		0.85	0.45		0.85	V
Gate-Body Leakage	I_{GSS}			± 100			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}			1			1	μA
On-State Drain Current	$V_{GS} = 4.5\text{ V}$ $I_{D(on)}$	15			15			A
Drain-Source On-Resistance	$V_{GS} = 4.5\text{ V}$ $r_{DS(on)}$		0.025	0.031		0.027	0.033	Ω
	$V_{GS} = 2.5\text{ V}$		0.030	0.037		0.033	0.040	
	$V_{GS} = 1.8\text{ V}$		0.036	0.047		0.042	0.051	
Forward Transconductance	g_{fs}		30			40		S
Diode Forward Voltage	V_{SD}		0.8	1.2		0.8	1.2	V
Dynamic								
Gate Charge	Q_g		7.5	12		11.2	14	nC
Gate-Source Charge	Q_{gs}		1.4			1.4		
Gate-Drain Charge	Q_{gd}		1.2			2.2		
Gate Resistance	R_g	1.1	2.2	3.3	NS	NS	NS	Ω
Switching								
Turn-On Time*	$t_{d(on)}$		9	15		15	25	ns
	t_r		30	45		40	60	
Turn-Off Time*	$t_{d(off)}$		35	55		48	70	
	t_f		10	15		31	45	
Source-Drain Reverse Recovery Time	t_{rr}		13	25		13	25	

NS denotes not specified in datasheet.

Specification comparisons are supplied as a courtesy to compare two devices and do not constitute a commercial product datasheet or any guarantee of identical performance. Designers should refer to the appropriate datasheets of the same number for guaranteed specification limits.