Si2304BDS vs. Si2304DS

Description: **N-Channel, 30 V (D-S) MOSFET**
Package: **SOT-23**
Pin Out: **Identical**

Part Number Replacements:
Si2304BDS-T1-E3 Replaces Si2304DS-T1-E3
Si2304BDS-T1 Replaces Si2304DS-T1

ABSOLUTE MAXIMUM RATINGS T_A = 25 °C, unless otherwise noted

Parameter		Symbol	Si2304BDS	Si2304DS	Unit
Drain-Source Voltage		V_{DS}	30	30	V
Gate-Source Voltage		V_{GS}	± 20	± 20	
Continuous Drain Current	T_A = 25 °C	I_D	3.2	2.5	A
	T_A = 70 °C		2.5	2.0	
Pulsed Drain Current		I_{DM}	10	10	
Continuous Source Current (MOSFET Diode Conduction)		I_S	0.9	1.25	
Power Dissipation	T_A = 25 °C	P_D	1.08	1.25	W
	T_A = 70 °C		0.69	0.8	
Operating Junction and Storage Temperature Range		T_j and T_{stg}	- 55 to 150	- 55 to 150	°C
Maximum Junction-to-Ambient		R_{thJA}	115	100	°C/W

SPECIFICATIONS T_J = 25 °C, unless otherwise noted

Parameter		Symbol	Si2304BDS			Si2304DS			Unit
			Min	Typ	Max	Min	Typ	Max	
Static									
Gate-Threshold Voltage		$V_{G(th)}$	1.5		3.0	1.5			V
Gate-Body Leakage		I_{GSS}			± 100			± 100	nA
Zero Gate Voltage Drain Current		I_{DSS}			0.5			0.5	µA
On-State Drain Current	V_{GS} = 10 V	$I_{D(on)}$	6			6			A
	V_{GS} = 4.5 V		NS			4			
Drain-Source On-Resistance	V_{GS} = 10 V	$r_{DS(on)}$		0.055	0.070		0.092	0.117	Ω
	V_{GS} = 4.5 V			0.080	0.105		0.142	0.190	
Forward Transconductance		g_{fs}		6			4.6		S
Diode Forward Voltage		V_{SD}		0.8	1.2		0.77	1.2	V
Dynamic									
Gate Charge		Q_g		2.6	4		2.4	4	nC
Total Gate Charge		Q_{gt}		4.6	7		4.5	10	
Gate-Source Charge		Q_{gs}		0.8			0.8		
Gate-Drain Charge		Q_{gd}		1.15			1.0		
Gate Resistance		R_g		3.0			NS		Ω
Switching									
Turn-On Time*		$t_{d(on)}$		7.5	12		8	20	ns
		t_r		12.5	20		12	30	
Turn-Off Time*		$t_{d(off)}$		19	30		17	35	
		t_f		15	25		8	20	

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.