

**Si2304DDS vs. Si2304BDS****Description:** N-Channel, 30 V (D-S) MOSFET**Package:** SOT-23**Pin Out:** Identical**Part Number Replacements:** Si2304DDS-T1-GE3 replaces Si2304BDS-T1-E3
Si2304DDS-T1-GE3 replaces Si2304BDS-T1-GE3

ABSOLUTE MAXIMUM RATINGS ($T_A = 25\text{ }^\circ\text{C}$, unless otherwise noted)					
PARAMETER	SYMBOL	Si2304DDS	Si2304BDS	UNIT	
Drain-Source Voltage	V_{DS}	30	30	V	
Gate-Source Voltage	V_{GS}	± 20	± 20		
Continuous Drain Current	$T_A = 25\text{ }^\circ\text{C}$	I_D	3.3	3.2	A
	$T_A = 70\text{ }^\circ\text{C}$		2.7	2.5	
Pulsed Drain Current	I_{DM}	15	10		
Continuous Source Current (MOSFET Diode Conduction)	I_S	0.9	0.9		
Power Dissipation	$T_A = 25\text{ }^\circ\text{C}$	P_D	1.1	1.08	W
	$T_A = 70\text{ }^\circ\text{C}$		0.7	0.69	
Operating Junction and Storage Temperature Range	T_i, T_{stg}	- 55 to 150	- 55 to 150	$^\circ\text{C}$	
Maximum Junction-to-Ambient	R_{thJA}	115	115	$^\circ\text{C/W}$	

SPECIFICATIONS ($T_J = 25\text{ }^\circ\text{C}$, unless otherwise noted)								
PARAMETER	SYMBOL	Si2304DDS			Si2304BDS			UNIT
		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	
Static								
Gate-Threshold Voltage	$V_{GS(th)}$	1.2	-	2.2	1.5	-	3	V
Gate-Body Leakage	I_{GSS}	-	-	± 100	-	-	± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	-	-	1	-	-	0.5	μA
On-State Drain Current	$V_{GS} = 10\text{ V}$ $I_{D(on)}$	10	-	-	6	-	-	A
Drain-Source On-Resistance	$V_{GS} = 10\text{ V}$ $R_{DS(on)}$	-	0.049	0.060	-	0.055	0.070	Ω
	$V_{GS} = 4.5\text{ V}$	-	0.061	0.075	-	0.080	0.105	
Forward Transconductance	g_{fs}	-	11	-	-	6	-	S
Diode Forward Voltage	V_{SD}	-	0.8	1.2	-	0.8	1.2	V
Dynamic								
Gate Charge	Q_g	-	4.5	6.7	-	4.6	7	nC
		-	2.1	3.2	-	2.6	4	
Gate-Source Charge	Q_{gs}	-	0.85	-	-	0.8	-	
Gate-Drain Charge	Q_{gd}	-	0.65	-	-	1.15	-	
Gate Resistance	R_g	0.8	4.4	8.8	-	3	-	Ω
Switching								
Turn-On-Time	$t_{d(on)}$	-	5	10	-	7.5	12	ns
	t_r	-	12	20	-	12.5	20	
Turn-Off-Time	$t_{d(off)}$	-	10	15	-	19	30	
	t_f	-	5	10	-	15	25	

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.