Si4500BDY vs. Si4500DY

Description: **Complementary MOSFET Half-Bridge (N- and P-Channel)**
Package: **SOIC-8**
Pin Out: **Identical**

Part Number Replacements:

Si4500BDY Replaces Si4500DY
Si4500BDY-E3 (Lead (Pb)-free version) Replaces Si4500DY
Si4500BDY-T1 Replaces Si4500DY-T1
Si4500BDY-T1-E3 (Lead (Pb)-free version) Replaces Si4500DY-T1

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

Parameter		Symbol	Channel	Si4500BDY	Si4500DY	Unit
Drain-Source Voltage		V_{DS}	N-Ch P-Ch	20 - 20	20 - 20	V
Gate-Source Voltage		V_{GS}		± 12	± 12	
Continuous Drain Current	T_A = 25 °C	I_D	N-Ch P-Ch	9.1 - 5.3	7.0 - 4.5	A
	T_A = 70 °C		N-Ch P-Ch	7.3 - 4.9	5.5 - 3.5	
Pulsed Drain Current		I_{DM}	N-Ch P-Ch	30 - 20	30 - 20	
Continuous Source Current (MOSFET Diode Conduction)		I_S	N-Ch P-Ch	2.1 - 2.1	1.7 - 1.7	
Power Dissipation	T_A = 25 °C	P_D		2.5	2.5	W
	T_A = 70 °C			1.6	1.6	
Operating Junction and Storage Temperature Range		T_j and T_{stg}		- 55 to 150	- 55 to 150	°C
Maximum Junction-to-Ambient		R_{thJA}		50	50	°C/W

SPECIFICATIONS T_J = 25 °C, unless otherwise noted

Parameter		Symbol	Channel	Si4500BDY			Si4500DY			Unit
				Min	Typ	Max	Min	Typ	Max	
Static										
Gate-Threshold Voltage		$V_{GS(th)}$	N-Ch P-Ch	0.6 - 0.6		1.5 - 1.5	0.6 - 0.6			V
Gate-Body Leakage		I_{GSS}				± 100			± 100	nA
Zero Gate Voltage Drain Current		I_{DSS}	N-Ch P-Ch			1 -1			1 -1	µA
On-State Drain Current	V_{GS} = 4.5 V	$I_{D(on)}$	N-Ch	30			30			A
	V_{GS} = - 4.5 V		P-Ch	- 20			- 20			
Drain-Source On-Resistance	V_{GS} = 4.5 V	$r_{DS(on)}$	N-Ch		0.016	0.020		0.022	0.030	Ω
	V_{GS} = - 4.5 V		P-Ch		0.048	0.060		0.058	0.065	
	V_{GS} = 2.5 V		N-Ch		0.024	0.030		0.030	0.040	
	V_{GS} = - 2.5 V		P-Ch		0.082	0.100		0.087	0.100	
Forward Transconductance		g_{fs}	N-Ch P-Ch		29 11			22 10		S
Diode Forward Voltage		V_{SD}	N-Ch P-Ch		0.8 - 0.8	1.2 - 1.2		0.70 - 0.80	1.2 - 1.2	V

SPECIFICATIONS T_J = 25 °C, unless otherwise noted									
Parameter	**Symbol**	**Channel**	**Si4500BDY**			**Si4500DY**			**Unit**
			Min	**Typ**	**Max**	**Min**	**Typ**	**Max**	
Dynamic									
Total Gate Charge	Q_g	N-Ch P-Ch		11 6.0	17 9.0		13 8.5	25 15	nC
Gate-Source Charge	Q_{gs}	N-Ch P-Ch		2.5 1.3			3.0 2.8		
Gate-Drain Charge	Q_{gd}	N-Ch P-Ch		3.2 1.6			3.3 1.7		
Switching									
Turn-On Time	$t_{d(on)}$	N-Ch P-Ch		35 20	50 30		22 15	40 30	ns
	t_r	N-Ch P-Ch		50 35	80 60		40 32	80 60	
Turn-Off Time	$t_{d(off)}$	N-Ch P-Ch		31 55	50 85		50 57	100 100	
	t_f	N-Ch P-Ch		15 35	30 60		20 40	40 80	
Source-Drain Reverse Recovery Time	t_{rr}	N-Ch P-Ch		30 25	60 50		40 40	80 80	

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.