Si4501ADY vs. Si4501DY

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

Part Number Replacements:

Si4501ADY Replaces Si4501DY
Si4501ADY-E3 (Lead (Pb)-free version) Replaces Si4501DY
Si4501ADY-T1 Replaces Si4501DY-T1
Si4501ADY-T1-E3 (Lead (Pb)-free version) Replaces Si4501DY-T1

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

Parameter		Symbol	Channel	Si4501ADY	Si4501DY	Unit
Drain-Source Voltage		V_{DS}	N-Ch P-Ch	30 - 8	30 - 8	V
Gate-Source Voltage		V_{GS}	N-Ch P-Ch	± 20 ± 8	± 20 ± 8	V
Continuous Drain Current	T_A = 25 °C	I_D	N-Ch P-Ch	8.8 - 5.7	9.0 - 6.2	A
	T_A = 70 °C		N-Ch P-Ch	7.0 - 4.5	7.4 - 5.0	A
Pulsed Drain Current		I_{DM}	N-Ch P-Ch	30 - 30	30 - 20	A
Continuous Source Current (MOSFET Diode Conduction)		I_S	N-Ch P-Ch	1.8 - 1.8	1.7 - 1.7	A
Power Dissipation	T_A = 25 °C	P_D		2.5	2.5	W
	T_A = 70 °C			1.6	1.6	W
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	Si4501ADY			Si4501DY			Unit
				Min	Typ	Max	Min	Typ	Max	
Static										
Drain-Source Breakdown Voltage		$V_{(BR)DSS}$	N-Ch P-Ch	30 - 8			30 - 8			V
Gate-Threshold Voltage		$V_{GS(th)}$	N-Ch P-Ch	0.8 - 0.45		1.8 - 1.0	0.8 - 0.45			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} = 10 V	$I_{D(on)}$	N-Ch	30			30			A
	V_{GS} = - 4.5 V		P-Ch	- 20			- 20			A
Drain-Source On-Resistance	V_{GS} = 10 V	$r_{DS(on)}$	N-Ch		0.015	0.018		0.015	0.018	Ω
	V_{GS} = - 4.5 V		P-Ch		0.030	0.042		0.034	0.042	Ω
	V_{GS} = 4.5 V		N-Ch		0.022	0.027		0.022	0.027	Ω
	V_{GS} = - 2.5 V		P-Ch		0.048	0.060		0.048	0.060	Ω
Forward Transconductance		g_{fs}	N-Ch P-Ch		18 12			20 14		S
Diode Forward Voltage		V_{SD}	N-Ch P-Ch		0.73 - 0.75	- 1.1		0.71 - 0.70	1.1 - 1.1	V

Specification Comparison

Vishay Siliconix

SPECIFICATIONS T_J = 25 °C, unless otherwise noted									
Parameter	**Symbol**	**Channel**	**Si4501ADY**			**Si4501DY**			**Unit**
			Min	**Typ**	**Max**	**Min**	**Typ**	**Max**	
Dynamic									
Total Gate Charge	Q_g	N-Ch P-Ch		11.5 13.5	20 20		4.5 15	20 25	nC
Gate-Source Charge	Q_{gs}	N-Ch P-Ch		3 2.2			3.3 3.0		
Gate-Drain Charge	Q_{gd}	N-Ch P-Ch		4 3			6.6 2.0		
Switching									
Turn-On Time	$t_{d(on)}$	N-Ch P-Ch		15 21	22 40		13 20	20 40	ns
	t_r	N-Ch P-Ch		8 45	15 70		9 50	18 100	
Turn-Off Time	$t_{d(off)}$	N-Ch P-Ch		35 60	50 100		35 110	50 220	
	t_f	N-Ch P-Ch		10 55	20 85		17 60	30 120	
Source-Drain Reverse Recovery Time	t_{rr}	N-Ch P-Ch		30 50	60 100		35 60	70 100	

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.