



## Si4420BDY vs. Si4420DY

**Description:** N-Channel, 30-V (D-S) MOSFET  
**Package:** SO-8  
**Pin Out:** Identical

**Part Number Replacements:**

Si4420BDY-T1-E3 Replaces Si4420DY-T1-E3  
 Si4420BDY-T1-E3 Replaces Si4420DY-T1

**Summary of Performance:**

The Si4420BDY is the replacement to the original Si4420DY; both parts perform identically, including limits to the parametric tables below.

ABSOLUTE MAXIMUM RATINGS (T <sub>A</sub> = 25°C UNLESS OTHERWISE NOTED)				
Parameter	Symbol	Si4420BDY	Si4420DY	Unit
Drain-Source Voltage	V <sub>DS</sub>	30	30	V
Gate-Source Voltage	V <sub>GS</sub>	±20	±20	
Continuous Drain Current	T <sub>A</sub> = 25°C	13.5	13.5	A
	T <sub>A</sub> = 70°C	10.8	10.8	
Pulsed Drain Current	I <sub>DM</sub>	50	50	
Continuous Source Current (MOSFET Diode Conduction)	I <sub>S</sub>	2.3	2.7	
Power Dissipation	T <sub>A</sub> = 25°C	2.5	3.0	W
	T <sub>A</sub> = 70°C	1.6	1.9	
Operating Junction & Storage Temperature Range	T <sub>J</sub> & T <sub>stg</sub>	-55 to 150	-55 to 150	°C
Maximum Junction-to-Ambient	R <sub>thJA</sub>	50	42	°C/W

SPECIFICATIONS (T <sub>J</sub> = 25°C UNLESS OTHERWISE NOTED)								
Parameter	Symbol	Si4420BDY			Si4420DY			Unit
		Min	Typ	Max	Min	Typ	Max	
<b>Static</b>								
Gate-Threshold Voltage	V <sub>GS(th)</sub>	1.0		3.0	1.0	2.0	3.0	V
Gate-Body Leakage	I <sub>GSS</sub>			±100			±100	nA
Zero Gate Voltage Drain Current	I <sub>DSS</sub>			1			1	µA
On-State Drain Current	V <sub>GS</sub> = 10 V I <sub>D(on)</sub>	30			30			A
Drain-Source On-Resistance	V <sub>GS</sub> = 10 V r <sub>DS(on)</sub>		0.007	0.0085		0.0075	0.009	Ω
	V <sub>GS</sub> = 4.5 V		0.009	0.011		0.010	0.013	
Forward Transconductance	g <sub>fs</sub>		50			50		S
Diode Forward Voltage	V <sub>SD</sub>		0.75	1.1		NS	1.1	V
<b>Dynamic</b>								
Total Charge	Q <sub>g</sub>		16	25		29	45	nC
Total Gate Charge	Q <sub>gt</sub>		31	50		58	90	
Gate-Source Charge	Q <sub>gs</sub>		6.6			12		
Gate-Drain Charge	Q <sub>gd</sub>		4.0			9.5		
Gate Resistance	R <sub>g</sub>	0.5	1.0	1.5	0.5	2.1	4.6	Ω
<b>Switching</b>								
Turn-On Time*	t <sub>d(on)</sub>		15	25		22	35	ns
	t <sub>r</sub>		11	18		13	20	
Turn-Off Time*	t <sub>d(off)</sub>		40	60		82	125	
	t <sub>f</sub>		12	20		30	45	
Source-Drain Reverse Recovery Time	t <sub>rr</sub>		30	50		50	75	

NS denotes parameter not specified