Si4431BDY vs. Si4431ADY

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

Part Number Replacements:

Si4431BDY Replaces Si4431ADY
Si4431BDY-E3 (Lead (Pb)-free version) Replaces Si4431ADY
Si4431BDY-T1 Replaces Si4431ADY-T1
Si4431BDY-T1-E3 (Lead (Pb)-free version) Replaces Si4431ADY-T1

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

Parameter		Symbol	Si4431BDY	Si4431ADY	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	- 7.5	- 7.2	A
	T_A = 70 °C		- 6.0	- 5.8	
Pulsed Drain Current		I_{DM}	- 30	- 30	
Continuous Source Current (MOSFET Diode Conduction)		I_S	- 2.1	- 2.1	
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	Si4431BDY			Si4431ADY			Unit
			Min	Typ	Max	Min	Typ	Max	
Static									
Gate-Threshold Voltage		$V_{G(th)}$	- 1.0		- 3.0	- 1.0			V
Gate-Body Leakage		I_{GSS}			± 100			± 100	nA
Zero Gate Voltage Drain Current		I_{DSS}			- 1			- 1	µA
On-State Drain Current	V_{GS} = - 10 V	$I_{D(on)}$	- 30			- 30			A
	V_{GS} = - 4.5 V		- 7			- 7			
Drain-Source On-Resistance	V_{GS} = - 10 V	$r_{DS(on)}$		0.023	0.030		0.024	0.030	Ω
	V_{GS} = - 4.5 V			0.036	0.050		0.040	0.052	
Forward Transconductance		g_{fs}		18			14		S
Diode Forward Voltage		V_{SD}		- 0.78	- 1.1		- 0.78	- 1.1	V
Dynamic									
Total Gate Charge		Q_g		13	20		12	20	nC
Gate-Source Charge		Q_{gs}		3.6			4.7		
Gate-Drain Charge		Q_{gd}		6			3.7		
Switching									
Turn-On Time		$t_{d(on)}$		10	20		12	20	ns
		t_r		10	20		15	20	
Turn-Off Time		$t_{d(off)}$		70	110		40	55	
		t_f		47	70		20	25	
Source-Drain Reverse Recovery Time		t_{rr}		45	80		30	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.