Si4816BDY vs. Si4816DY

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

Part Number Replacements:
Si4816BDY-T1-E3 Replaces Si4816DY-T1-E3
Si4816BDY-T1 Replaces Si4816DY-T1

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

Parameter		Symbol	Si4816BDY		Si4816DY		Unit
			Ch-1	Ch-2	Ch-1	Ch-2	
Drain-Source Voltage		V_{DS}	30		30		V
Gate-Source Voltage		V_{GS}	± 20		± 20		V
Continuous Drain Current	T_A = 25 °C	I_D	6.8	11.4	6.3	10	A
	T_A = 70 °C		5.5	9.0	5.4	8.2	
Pulsed Drain Current		I_{DM}	30	40	30	40	A
Continuous Source Current (MOSFET Diode Conduction)		I_S	1	2.2	1.3	2.2	A
Power Dissipation	T_A = 25 °C	P_D	1.4	2.4	1.4	2.4	W
	T_A = 70 °C		0.9	1.5	0.9	1.5	W
Operating Junction and Storage Temperature Range		T_j and T_{stg}	- 55 to 150		- 55 to 150		°C
Maximum Junction-to-Ambient - MOSFET		R_{thJA}	90	53	90	53	°C/W
Maximum Junction-to-Ambient - Schottky				60		60	°C/W

MOSFET SPECIFICATIONS T_J = 25 °C, unless otherwise noted

Parameter		Symbol		Si4816BDY			Si4816DY			Unit
				Min	Typ	Max	Min	Typ	Max	
Static										
Gate-Threshold Voltage		$V_{GS(th)}$	Ch-1	1.0		3.0	0.8		NS	V
			Ch-2	1.0		3.0	1.0		NS	V
Gate-Body Leakage		I_{GSS}	Ch-1			± 100			± 100	nA
			Ch-2			± 100			± 100	nA
Zero Gate Voltage Drain Current		I_{DSS}	Ch-1			1			1	µA
			Ch-2			100			100	µA
On-State Drain Current	V_{GS} = 10 V	$I_{D(on)}$	Ch-1	20			20			A
			Ch-2	30			30			A
Drain-Source On-Resistance	V_{GS} = 10 V	$r_{DS(on)}$	Ch-1		0.0155	0.0185		0.018	0.022	Ω
			Ch-2		0.0093	0.0115		0.0105	0.013	Ω
	V_{GS} = 4.5 V		Ch-1		0.0185	0.0225		0.024	0.030	Ω
			Ch-2		0.013	0.016		0.015	0.0185	Ω
Forward Transconductance		g_{fs}	Ch-1		30			17		S
			Ch-2		31			28		S
Diode Forward Voltage		V_{SD}	Ch-1		0.73	1.1		0.7	1.1	V
			Ch-2		0.47	0.5		0.47	0.5	V

MOSFET SPECIFICATIONS T_J = 25 °C, unless otherwise noted									
Parameter	**Symbol**		**Si4816BDY**			**Si4816DY**			**Unit**
			Min	**Typ**	**Max**	**Min**	**Typ**	**Max**	
Dynamic									
Total Charge	Q_g	Ch-1		7.8	10		8.0	12	nC
		Ch-2		11.6	18		15	23	
Gate-Source Charge	Q_{gs}	Ch-1		2.9			1.75		
		Ch-2		4.8			5.3		
Gate-Drain Charge	Q_{gd}	Ch-1		2.3			3.2		
		Ch-2		3.7			4.6		
Gate Resistance	R_g	Ch-1	1.5	3.0	4.5	1.5	NS	6.1	Ω
		Ch-2	0.9	1.8	2.7	0.5		2.6	
Switching									
Turn-On Time	$t_{d(on)}$	Ch-1		11	17		10	20	ns
		Ch-2		13	20		15	30	
	t_r	Ch-1		9	15		5	10	
		Ch-2		9	15		5	10	
Turn-Off Time	$t_{d(off)}$	Ch-1		24	40		26	50	
		Ch-2		31	50		44	80	
	t_f	Ch-1		9	15		8	16	
		Ch-2		11	17		12	24	
Source-Drain Reverse Recovery Time	t_{rr}	Ch-1		20	35		30	60	
		Ch-2		25	40		32	70	

SCHOTTKY SPECIFICATIONS T_J = 25 °C, unless otherwise noted									
Parameter		**Symbol**	**Si4816BDY**			**Si4816DY**			**Unit**
			Min	**Typ**	**Max**	**Min**	**Typ**	**Max**	
Static									
Forward Voltage Drop	T_J = 25 °C	V_F		0.47	0.50		0.47	0.50	nC
	T_J = 125 °C			0.36	0.42		0.36	0.42	
Maximum Reverse Leakage Current	T_J = 25 °C	I_{rm}		0.004	0.100		0.004	0.100	mA
	T_J = 100 °C			0.7	10		0.7	10	
	T_J = 125 °C			3.0	20		3.0	20	
Junction Capacitance		C_T		50			50		pF

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.