Si7858ADP vs. Si7858DP

Description: **N-Channel MOSFET**
Package: **PowerPAK® SO-8**
Pin Out: **Identical**

Part Number Replacements:
Si7858ADP-T1 Replaces Si7858DP-T1
Lead (Pb)-free: Si7858ADP-T1-E3 Replaces Si7858DP-T1-E3

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

Parameter		Symbol	Si7858ADP	Si7858DP	Unit
Drain-Source Voltage		V_{DS}	12	12	V
Gate-Source Voltage		V_{GS}	± 8	± 8	
Continuous Drain Current[a]	T_A = 25 °C	I_D	20	18	A
	T_A = 70 °C		16	14	
Pulsed Drain Current		I_{DM}	60	60	
Continuous Source Current[a] (MOSFET Diode Conduction)		I_S	1.6	1.6	
Power Dissipation	T_A = 25 °C	P_D	1.9	1.9	W
	T_A = 70 °C		1.2	1.2	
Operating Junction and Storage Temperature Range		T_j and T_{stg}	- 55 to 150	- 55 to 150	°C
Maximum Junction-to-Ambient[a]		R_{thJA}	65	65	°C/W
Maximum Junction-to-Case (Drain)[a]			1.5	1.5	

Notes:
a. Indicates Steady State, all others are independent of time.

SPECIFICATIONS T_J = 25 °C, unless otherwise noted

Parameter		Symbol	Si7858ADP			Si7858DP			Unit
			Min	Typ	Max	Min	Typ	Max	
Static									
Gate-Threshold Voltage		$V_{GS(th)}$	0.6	0.95	1.5	0.6	0.95	1.3	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} = 4.5 V	$I_{D(on)}$	30			30			A
Drain-Source On-Resistance	V_{GS} = 4.5 V	$r_{DS(on)}$		0.0020	0.0026		0.0024	0.003	Ω
	V_{GS} = 2.5 V			0.0029	0.0037		0.0031	0.004	
Forward Transconductance		g_{fs}		130			130		S
Diode Forward Voltage		V_{SD}		0.75	1.1		0.75	1.1	V
Dynamic									
Total Gate Charge		Q_g		54	80		40	60	nC
Gate-Source Charge		Q_{gs}		10			6.7		
Gate-Drain Charge		Q_{gd}		16			9.2		
Gate Resistance		R_g	0.5	1.2	2.0	0.5	1.4	2.3	Ω
Switching									
Turn-On Time		$t_{d(on)}$		40	60		40	60	ns
		t_r		40	60		40	60	
Turn-Off Time		$t_{d(off)}$		140	210		140	210	
		t_f		70	100		70	100	
Source-Drain Reverse Recovery Time		t_{rr}		50	80		50	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.