



New Product

Si7860ADP
Vishay Siliconix

N-Channel Reduced Q_g , Fast Switching MOSFET

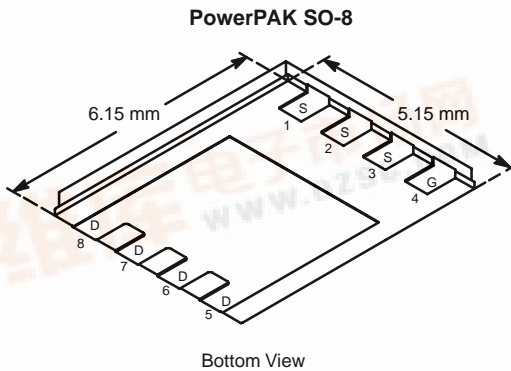
PRODUCT SUMMARY		
V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A)
30	0.0095 @ $V_{GS} = 10$ V	16
	0.0125 @ $V_{GS} = 4.5$ V	16

FEATURES

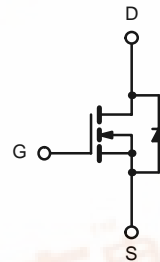
- TrenchFET® Power MOSFET
- PWM Optimized for High Efficiency
- New Low Thermal Resistance PowerPAK® Package with Low 1.07-mm Profile
- 100% R_g Tested

APPLICATIONS

- Buck Converter
 - High Side or Low Side
- Synchronous Rectifier
 - Secondary Rectifier



Ordering Information: Si7860ADP-T1-E3



N-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)					
Parameter		Symbol	10 secs	Steady State	Unit
Drain-Source Voltage		V_{DS}	30		V
Gate-Source Voltage		V_{GS}	± 20		
Continuous Drain Current ($T_J = 150^\circ\text{C}$) ^a	$T_A = 25^\circ\text{C}$	I_D	16	11	A
	$T_A = 70^\circ\text{C}$		13	8	
Pulsed Drain Current		I_{DM}	± 50		
Continuous Source Current (Diode Conduction) ^a		I_S	4.1	1.5	
Maximum Power Dissipation ^a	$T_A = 25^\circ\text{C}$	P_D	4.8	1.8	W
	$T_A = 70^\circ\text{C}$		3.1	1.1	
Operating Junction and Storage Temperature Range		T_J, T_{stg}	-55 to 150		$^\circ\text{C}$

THERMAL RESISTANCE RATINGS					
Parameter		Symbol	Typical	Maximum	Unit
Maximum Junction-to-Ambient (MOSFET) ^a	$t \leq 10$ sec	R_{thJA}	21	26	$^\circ\text{C}/\text{W}$
	Steady State		56	70	
Maximum Junction-to-Case (Drain)	Steady State	R_{thJC}	1.9	2.5	

Notes:
a. Surface Mounted on 1" x 1" FR4 Board.

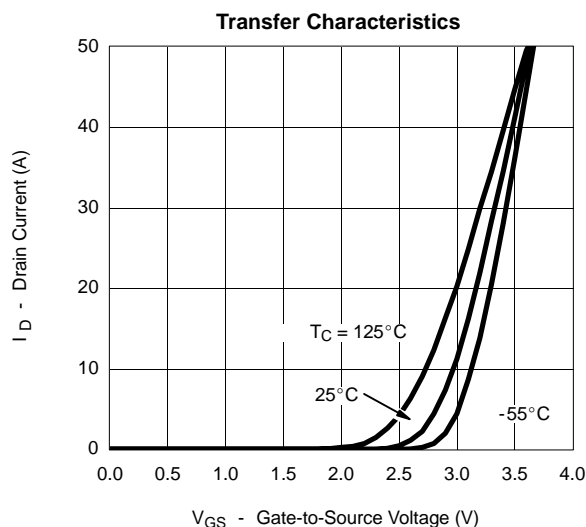
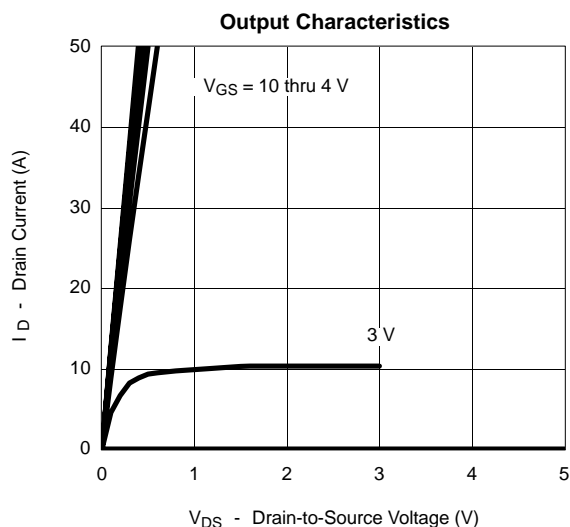


MOSFET SPECIFICATIONS (T_J = 25 °C UNLESS OTHERWISE NOTED)						
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250 μA	1.0		3.0	V
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ± 20 V			± 100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 30 V, V _{GS} = 0 V			1	μA
		V _{DS} = 30 V, V _{GS} = 0 V, T _J = 70 °C			5	
On-State Drain Current ^a	I _{D(on)}	V _{DS} ≥ 5 V, V _{GS} = 10 V	40			A
Drain-Source On-State Resistance ^a	r _{DS(on)}	V _{GS} = 10 V, I _D = 16 A		0.0079	0.0095	Ω
		V _{GS} = 4.5 V, I _D = 14 A		0.0105	0.0125	
Forward Transconductance ^a	g _{fs}	V _{DS} = 15 V, I _D = 16 A		60		S
Diode Forward Voltage ^a	V _{SD}	I _S = 3 A, V _{GS} = 0 V		0.70	1.1	V
Dynamic^b						
Total Gate Charge	Q _g	V _{DS} = 15 V, V _{GS} = 4.5 V, I _D = 16 A		13	18	nC
Gate-Source Charge	Q _{gs}			5		
Gate-Drain Charge	Q _{gd}			4.0		
Gate-Resistance	R _g		0.5	1.7	3.2	Ω
Turn-On Delay Time	t _{d(on)}	V _{DD} = 15 V, R _L = 15 Ω I _D ≅ 1 A, V _{GEN} = 10 V, R _G = 6 Ω		18	27	ns
Rise Time	t _r			12	18	
Turn-Off Delay Time	t _{d(off)}			46	70	
Fall Time	t _f			19	30	
Source-Drain Reverse Recovery Time	t _{rr}	I _F = 3 A, di/dt = 100 A/μs		40	70	

Notes

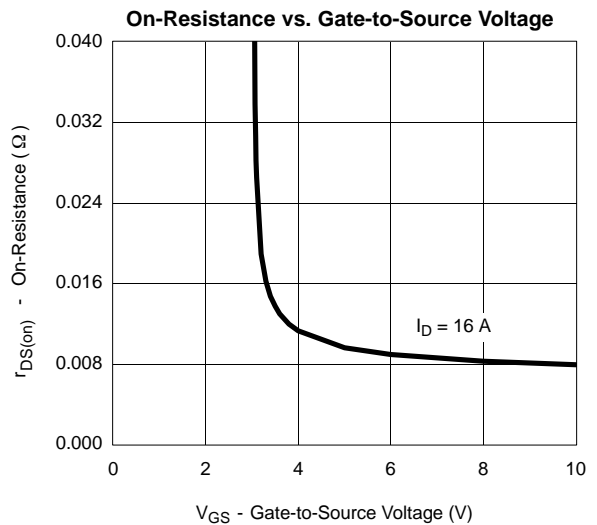
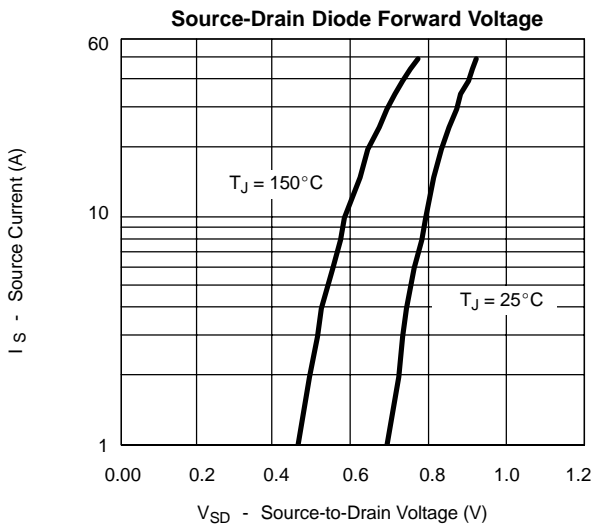
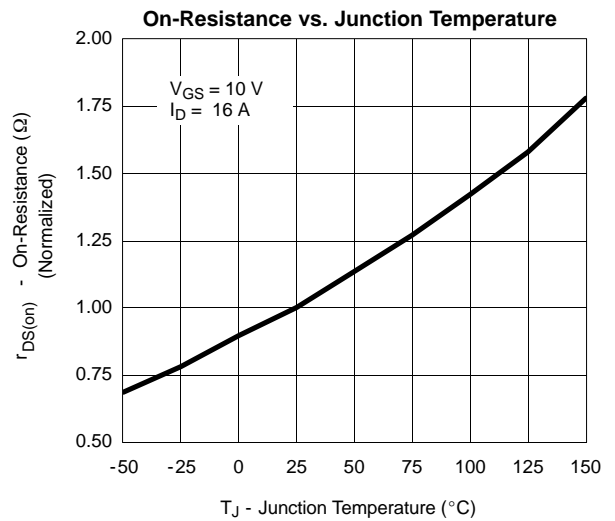
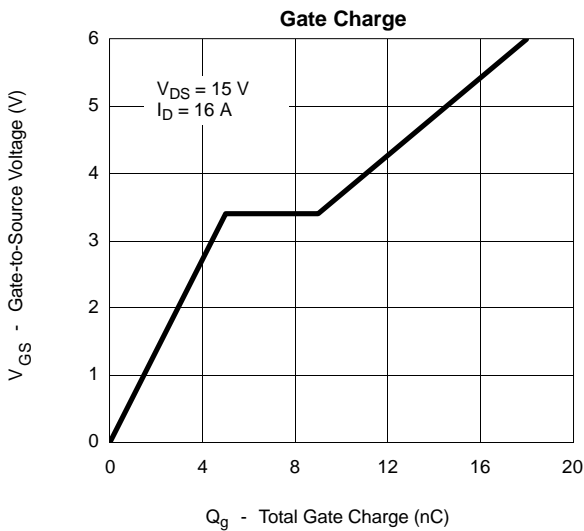
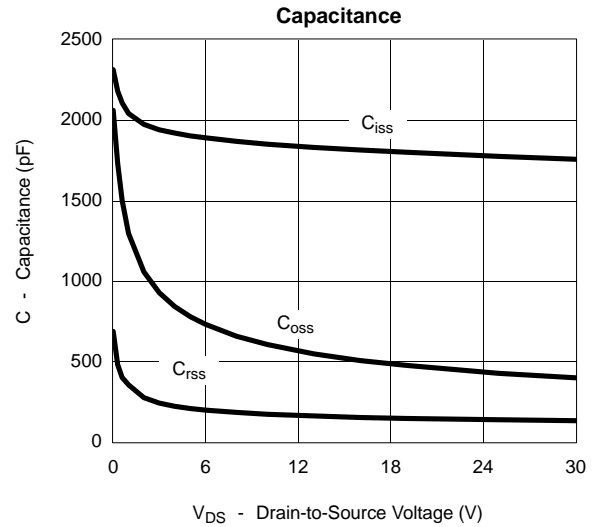
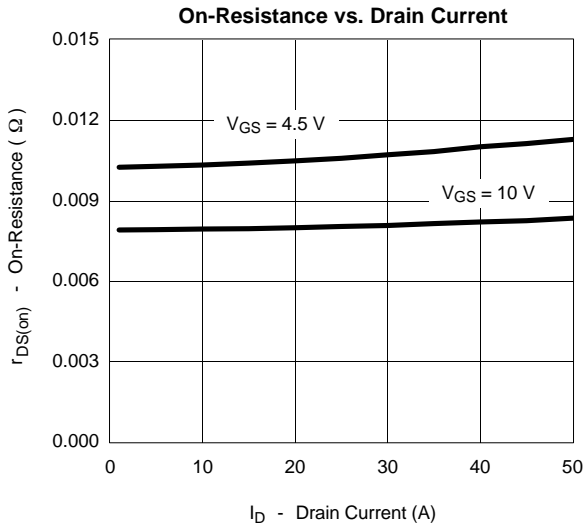
- a. Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2%.
- b. Guaranteed by design, not subject to production testing.

TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)



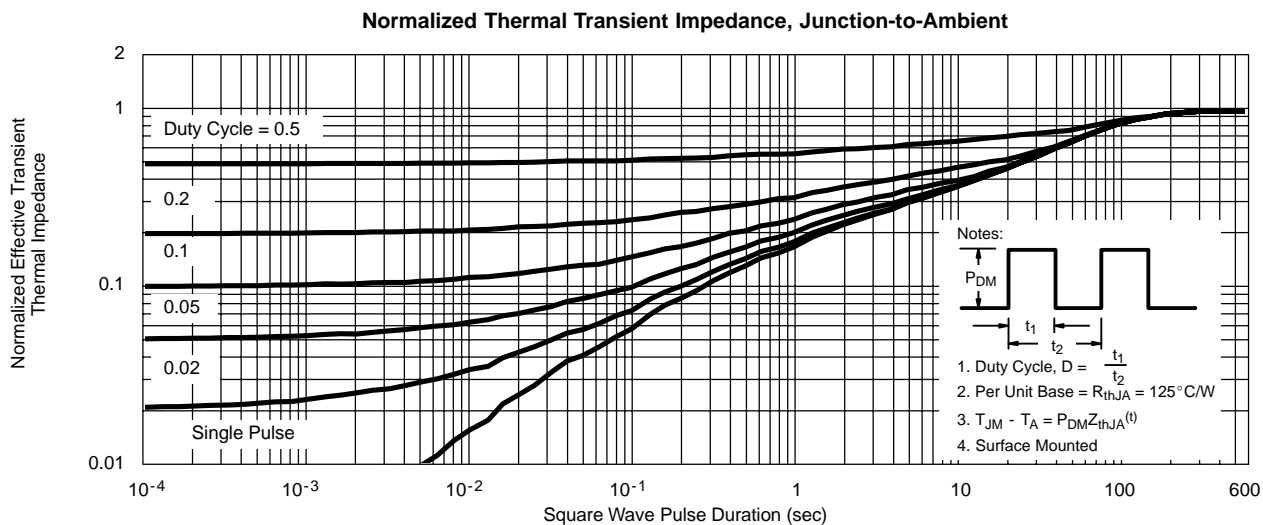
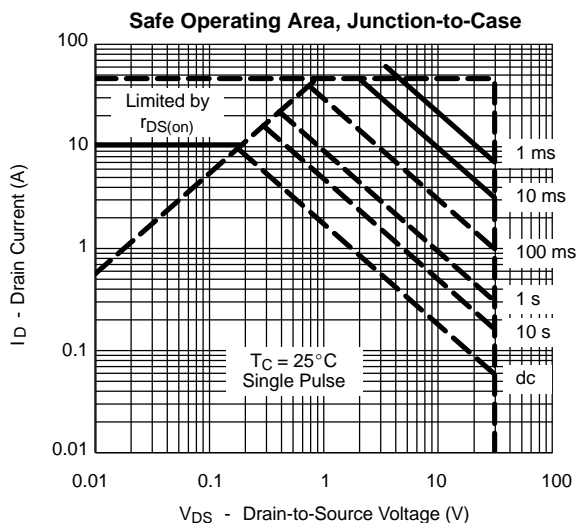
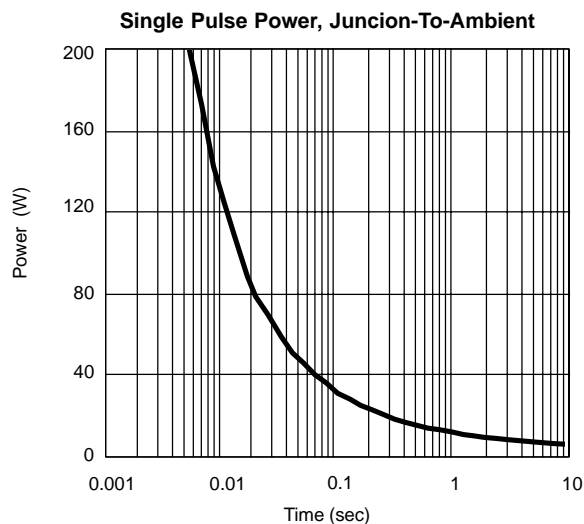
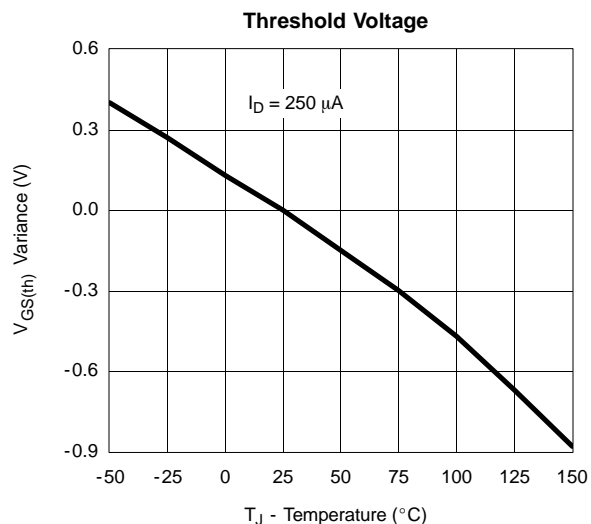


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