

GENERAL FEATURES

MOSFET		
$V_{(BR)DSS}$	$R_{DS(on)max}$	I_D
-60V	110m Ω @ $V_{GS} = -10V$	-3.3A
	130m Ω @ $V_{GS} = -4.5V$	-2.8A
SCHOTTKY DIODE		
V_R	$V_F max$	I_o
45V	450mV @ $I_F = 1A$	2.0A
	600mV @ $I_F = 2A$	

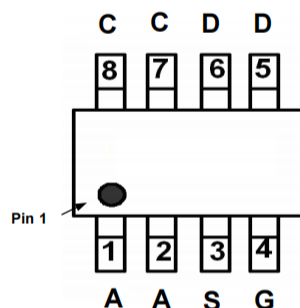
Application

- DC-DC Converters
- Power Management Functions
- Backlighting

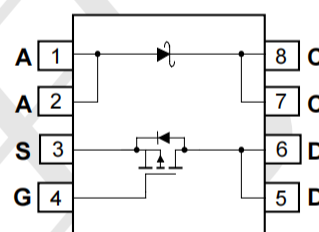
Package and Pin Configuration



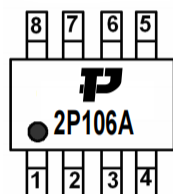
SOP-8 top view



Circuit diagram



Marking:



Absolute Maximum Ratings ($T_A=25^\circ\text{C}$ unless otherwise noted)

Characteristic	Symbol	Value	Units
Drain-Source Voltage	V_{DSS}	-60	V
Gate-Source Voltage	V_{GSS}	± 20	V
Drain Current (Note 6) $V_{GS} = -10V$	I_D	$t < 10s$ $T_A = +25^\circ\text{C}$	-4.5
		$T_A = +70^\circ\text{C}$	-3.6
Maximum Body Diode Forward Current (Note 6)	I_S	-2.1	A
Pulsed Drain Current (10 μs pulse, duty cycle = 1%)	I_{DM}	-19	A
Avalanche Current (Notes 7) $L = 0.1\text{mH}$	I_{AS}	-17.6	A
Avalanche Energy (Notes 7) $L = 0.1\text{mH}$	E_{AS}	15.4	mJ

Thermal Characteristic

Characteristic	Symbol	Value	Units
Total Power Dissipation (Note 5)	P_D	1.5	W
Thermal Resistance, Junction to Ambient (Note 5)	$R_{\theta JA}$	Steady State	80
		$t < 10s$	48
Total Power Dissipation (Note 6)	P_D	2.0	W
Thermal Resistance, Junction to Ambient (Note 6)	$R_{\theta JA}$	Steady State	61
		$t < 10s$	37
Thermal Resistance, Junction to Case	$R_{\theta JC}$	6.4	$^\circ\text{C/W}$
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	$^\circ\text{C}$

Electrical Characteristics (T_A=25°C unless otherwise noted)

P-Channel Mosfet

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 8)						
Drain-Source Breakdown Voltage	BV _{DSS}	-60	—	—	V	V _{GS} = 0V, I _D = -250μA
Zero Gate Voltage Drain Current	I _{DSS}	—	—	-1	μA	V _{DS} = -48V, V _{GS} = 0V
Gate-Source Leakage	I _{GSS}	—	—	100	nA	V _{GS} = ±16V, V _{DS} = 0V
ON CHARACTERISTICS (Note 8)						
Gate Threshold Voltage	V _{GS(th)}	-1	-1.7	-3	V	V _{DS} = V _{GS} , I _D = -250μA
Static Drain-Source On-Resistance	R _{DS(on)}	—	86	110	mΩ	V _{GS} = -10V, I _D = -3A
		—	98	130		V _{GS} = -4.5V, I _D = -2.5A
Diode Forward Voltage	V _{SD}	—	-0.7	-1.2	V	V _{GS} = 0V, I _S = -1A
DYNAMIC CHARACTERISTICS (Note 9)						
Input Capacitance	C _{iss}	—	1030	—	pF	V _{DS} = -30V, V _{GS} = 0V, f = 1.0MHz
Output Capacitance	C _{oss}	—	49.1	—		
Reverse Transfer Capacitance	C _{rss}	—	38.7	—		
Gate Resistance	R _G	—	13.6	—	Ω	V _{DS} = 0V, V _{GS} = 0V, f = 1.0MHz
Total Gate Charge (V _{GS} = -4.5V)	Q _g	—	9.5	—	nC	V _{DS} = -30V, I _D = -5A
Total Gate Charge (V _{GS} = -10V)	Q _g	—	19.4	—		
Gate-Source Charge	Q _{gs}	—	2.3	—		
Gate-Drain Charge	Q _{gd}	—	3.6	—		
Turn-On Delay Time	t _{D(on)}	—	3.7	—	ns	V _{GS} = -10V, V _{DS} = -30V, R _{GEN} = 6Ω, I _D = -5A
Turn-On Rise Time	t _r	—	6.3	—		
Turn-Off Delay Time	t _{D(off)}	—	58.7	—		
Turn-Off Fall Time	t _f	—	26.1	—		
Body Diode Reverse Recovery Time	t _{rr}	—	14.85	—	ns	I _S = -5A, di/dt = 100A/μs
Body Diode Reverse Recovery Charge	Q _{rr}	—	8.8	—	nC	I _S = -5A, di/dt = 100A/μs

Electrical Characteristics (T_A=25°C unless otherwise noted)

Schottky Diode

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Breakdown Voltage (Note 8)	V _{(BR)R}	45	—	—	V	I _R = 1mA
Forward Voltage (Note 8)	V _F	—	—	0.45	V	I _F = 1A
		—	0.48	0.6		I _F = 2A
Reverse Current (Note 8)	I _R	—	30	80	μA	V _R = 45V

Typical Electrical and Thermal Characteristics

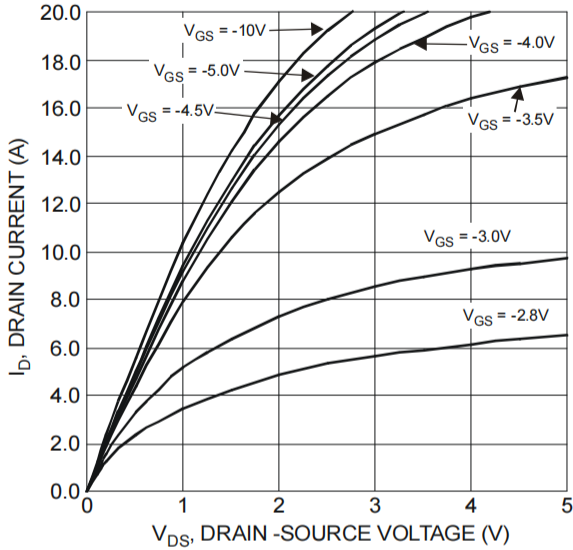


Figure 1 Typical Output Characteristics

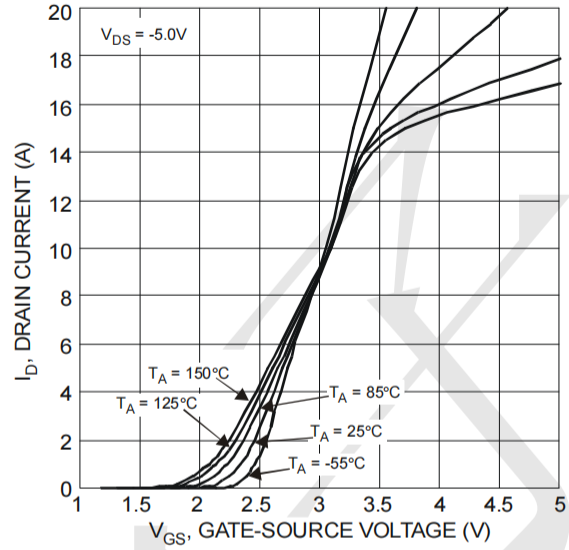


Figure 2 Typical Transfer Characteristics

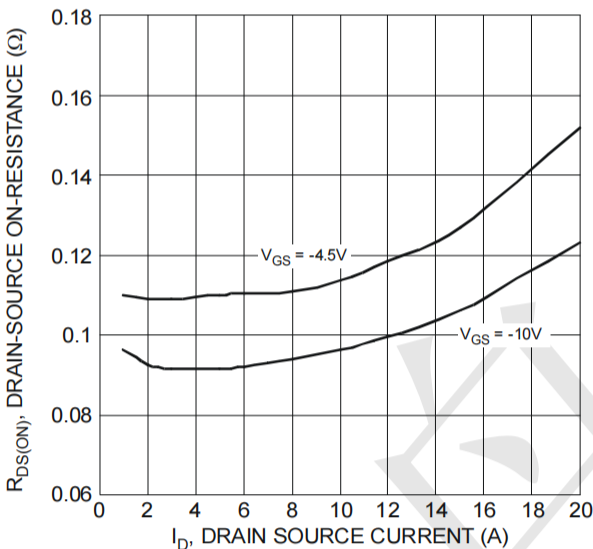


Figure 3 Typical On-Resistance vs. Drain Current and Gate Voltage

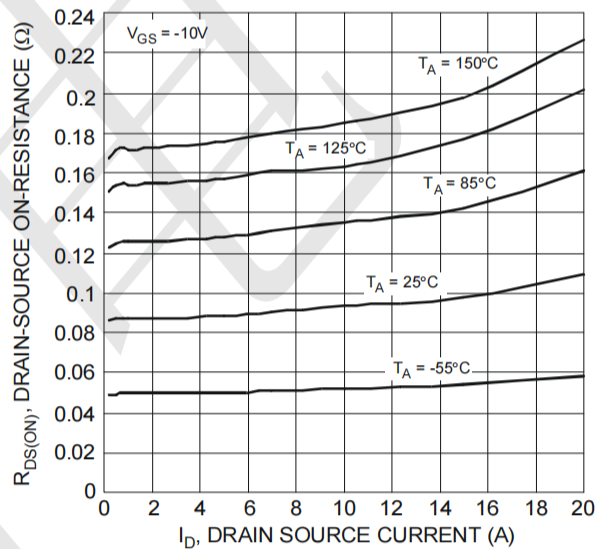


Figure 4 Typical On-Resistance vs. Drain Current and Temperature

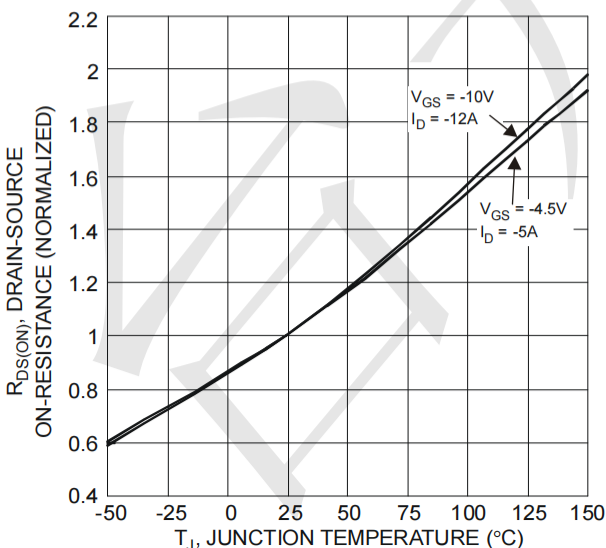


Figure 5 On-Resistance Variation with Temperature

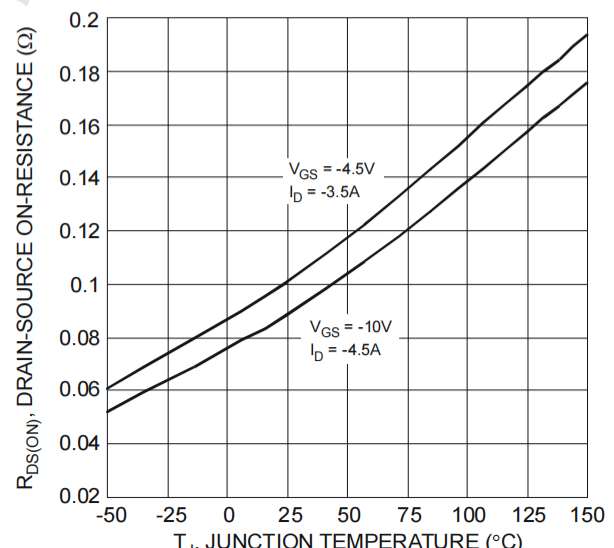


Figure 6 On-Resistance Variation with Temperature

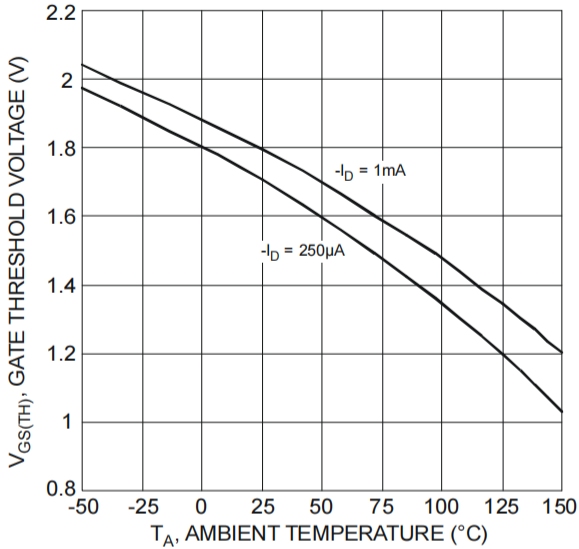


Figure 7 Gate Threshold Variation vs. Ambient Temperature

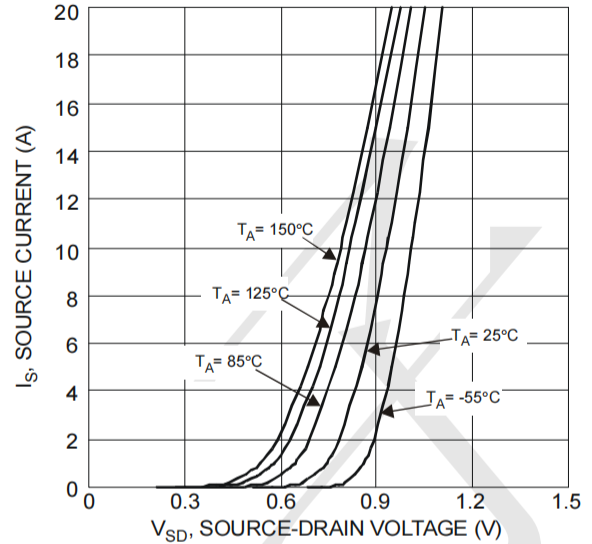


Figure 8 Diode Forward Voltage vs. Current

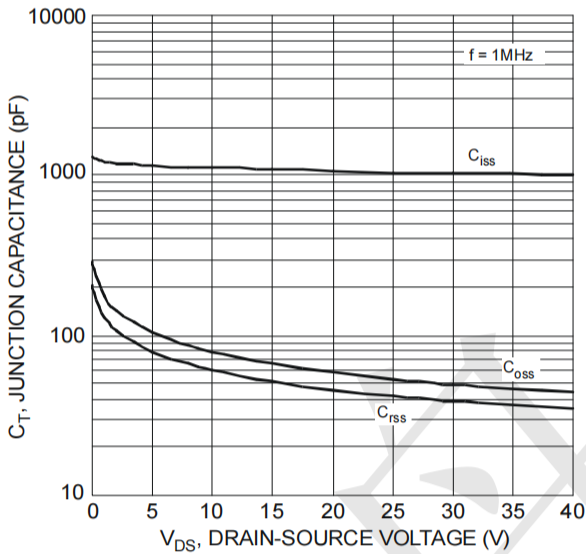


Figure 9 typical Junction Capacitance

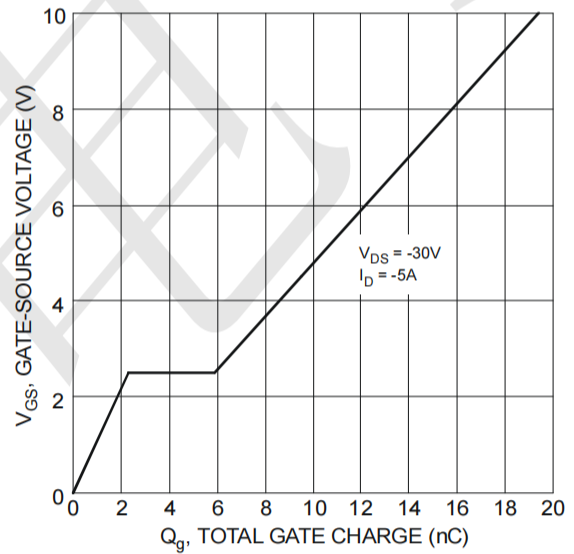


Figure 10 Gate-Charge Characteristics

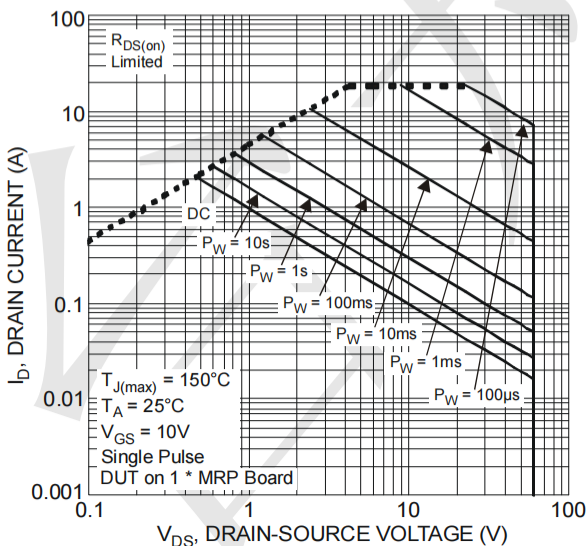
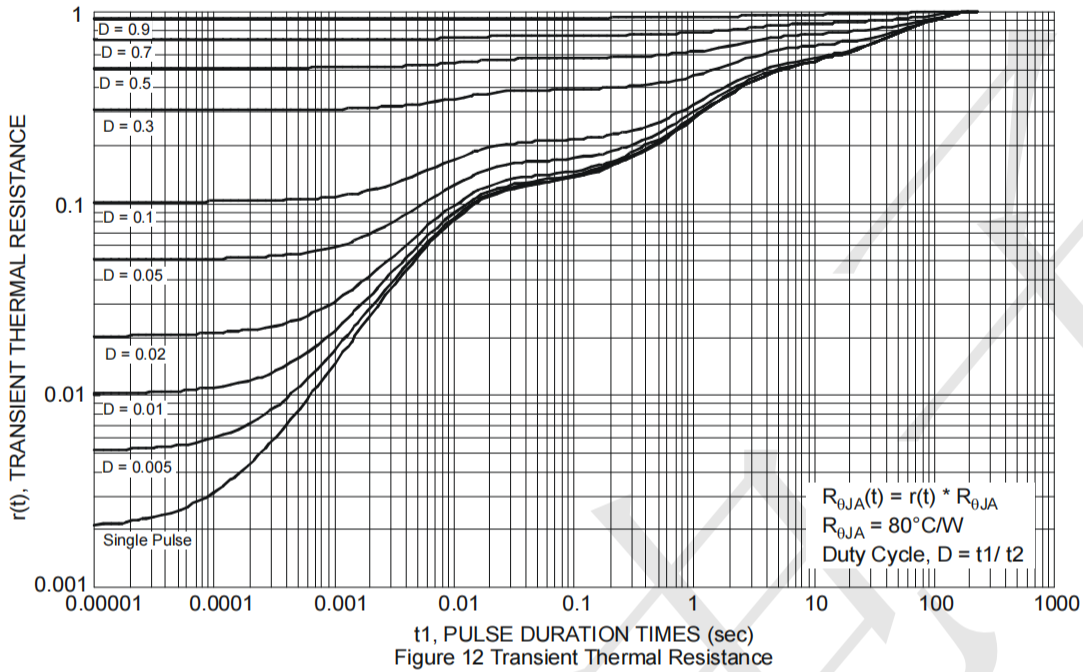
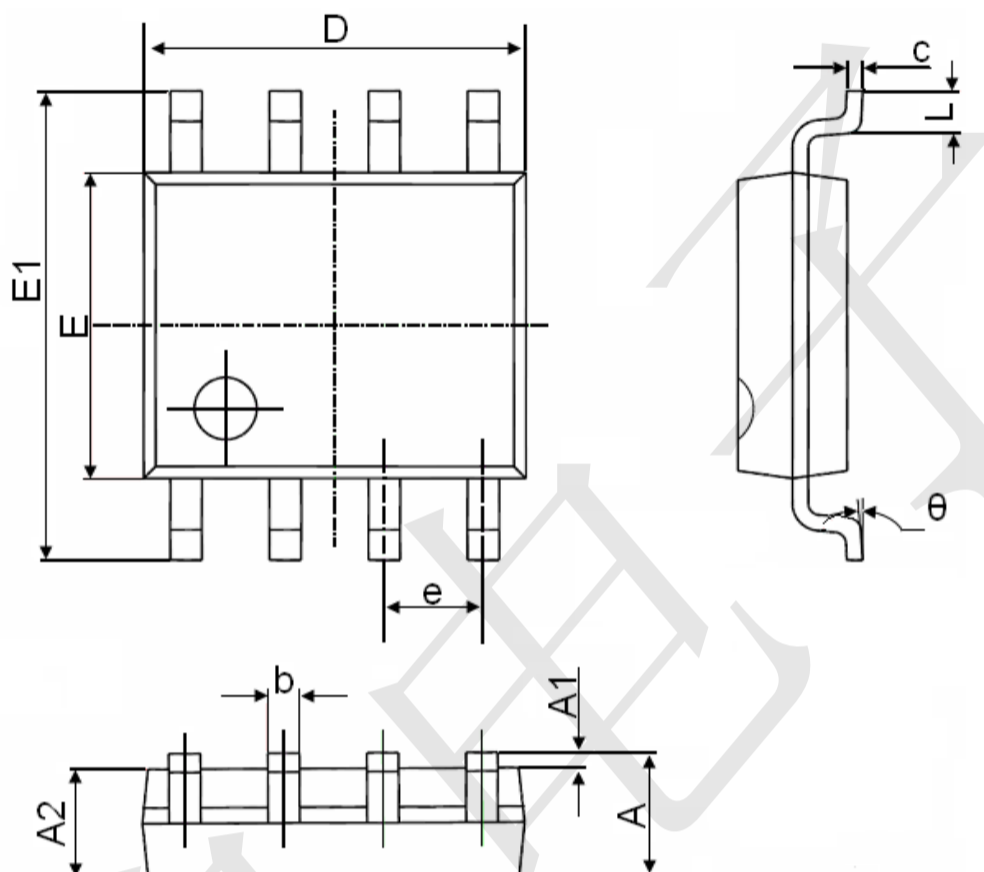


Figure 11 SOA, Safe Operation Area



SOP-8 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.006	0.010
D	4.700	5.100	0.185	0.200
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.270(BSC)		0.050(BSC)	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°

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