

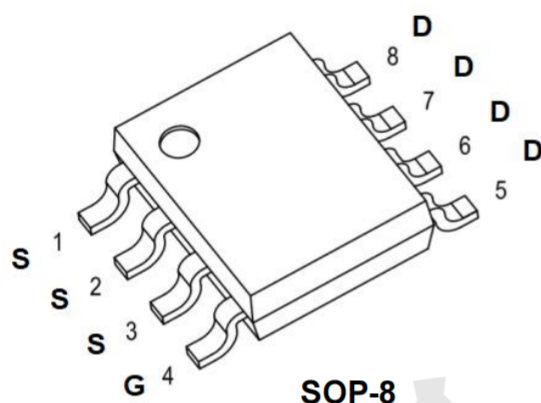
Product Summary

- V_{DS} 40 V
- I_{DS} (@ $V_{GS}=10V$) 12A
- $R_{DS(ON)}$ (@ $V_{GS}=10V$) < 7mΩ(Typ)

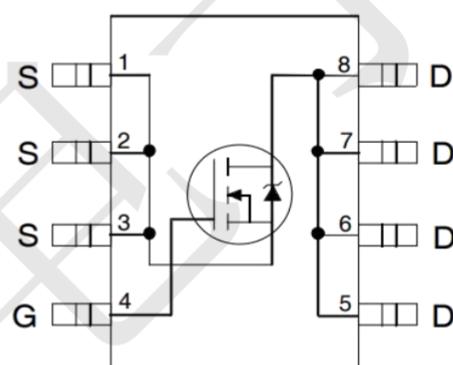
Application

- LED applications
- Synchronous Rectifiers for SMPS
- Power management
- PWM Application

Package and Pin Configuration



Circuit diagram



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

PARAMETER	SYMBOL	LIMIT	UNIT
Drain-Source Voltage	V_{DS}	40	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	I_D	12	A
Continuous Drain Current	I_D	8.5	A
Pulsed Drain Current (note1)	I_{DM}	36	A
Single Pulse Avalanche Energy $L=8.7\text{mH}$, $I_{AS}=6\text{A}$	EAS	76	mJ
Maximum Power Dissipation $T_A=25^{\circ}\text{C}$	P_D	1.47	W
Operating Junction Temperature Range	T_J	-55 to +150	$^{\circ}\text{C}$
Storage Temperature Range	T_{stg}	-55 to +150	$^{\circ}\text{C}$

Thermal Characteristic

PARAMETER	Symbol	Value	Unit
Thermal Resistance Junction-ambient	$R_{\theta JA}$	62.5	$^{\circ}\text{C/W}$
Thermal Resistance Junction-Case	$R_{\theta JC}$	28	$^{\circ}\text{C/W}$

notes 1. Repetitive Rating: Pulse width limited by maximum junction temperature.

2. When mounted on 1" square PCB (FR4 material).

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

PARAMETER	CONDITIONS	SYMBOL	MIN	TYP	MAX	UNIT
Static						
Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250μA	BV _{DSS}	40	--	--	V
Gate-Source Threshold Voltage	V _{DS} =V _{GS} , I _D = 250μA	V _{GS(th)}	1.2	1.8	2.5	V
Gate-Source Leakage	V _{DS} =0V, V _{GS} = ±20V	I _{GSS}	--	--	±100	nA
Zero Gate Voltage Drain Current	V _{DS} = 40V, V _{GS} =0V	I _{DSS}	--	--	1	μA
	V _{DS} = 32V, T _J =85°C		--	--	10	μA
Drain-Source On-State Resistance (Note 1)	V _{GS} = 10V, I _D =8A	R _{DS(on)}	--	7	12	mΩ
	V _{GS} = 4.5V, I _D =4A		--	12	15	mΩ
Forward Transconductance (Note 2)	V _{DS} = 10V, I _D = 10A	g _{fs}	--	14	--	S
Dynamic (Note 2)						
Total Gate Charge (Note 3)	V _{DS} = 20V, I _D =8A, V _{GS} =10V	Q _g	--	12	--	nC
Gate-Source Charge (Note 3)		Q _{gs}	--	3.3	--	
Gate-Drain Charge (Note 3)		Q _{gd}	--	6.7	--	
Input Capacitance	V _{DS} =25V, V _{GS} = 0V, F= 1.0MHz	C _{iss}	--	1220	--	pF
Output Capacitance		C _{oss}	--	120	--	
Reverse Transfer Capacitance		C _{rss}	--	55	--	
Switching						
Turn-On Delay Time (Note 3)	V _{DD} = 20V, I _D = 10A, V _{GS} = 10V, R _G = 3.3Ω	t _{d(on)}	--	13	--	nS
Rise Time (Note 3)		t _r	--	2.2	--	
Turn-Off Delay Time (Note 3)		t _{d(off)}	--	72	--	
Fall Time (Note 3)		t _f	--	4.5	--	
Source-Drain Diode Ratings and Characteristics (Note 2)						
Forward Voltage	V _{GS} = 0V, I _{SD} = 2A	V _{SD}	--	0.7	1.1	V
Continuous Source Current	Integral reverse diode in the MOSFET	I _S	--	--	12	A
Pulsed Current (Note 1)		I _{SM}	--	--	36	A

Notes:

1. Pulse test; pulse width ≤ 300 μS, duty cycle ≤ 2%.
2. Guaranteed by design, not subject to production testing.
3. Independent of operating temperature

TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)

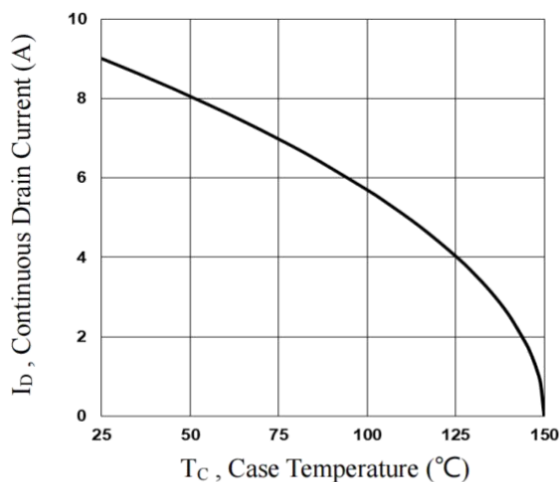


Fig.1 Continuous Drain Current vs. T_C

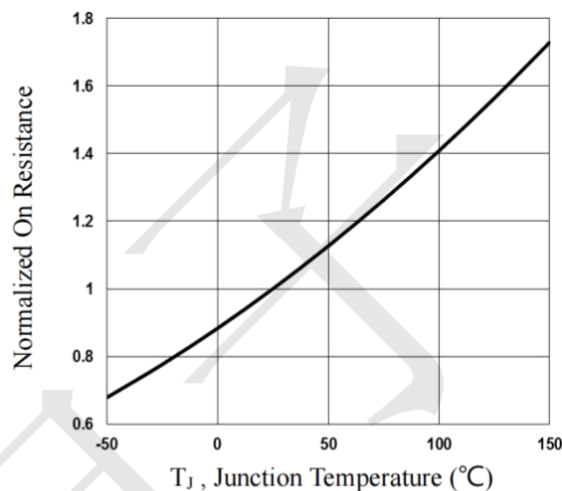


Fig.2 Normalized $R_{DS(on)}$ vs. T_J

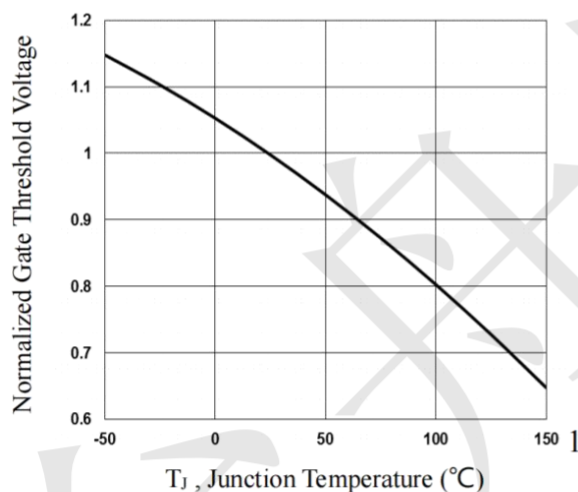


Fig.3 Normalized V_{th} vs. T_J

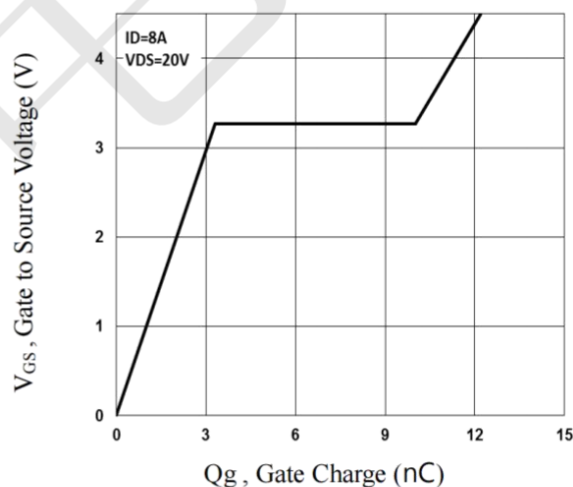


Fig.4 Gate Charge Waveform

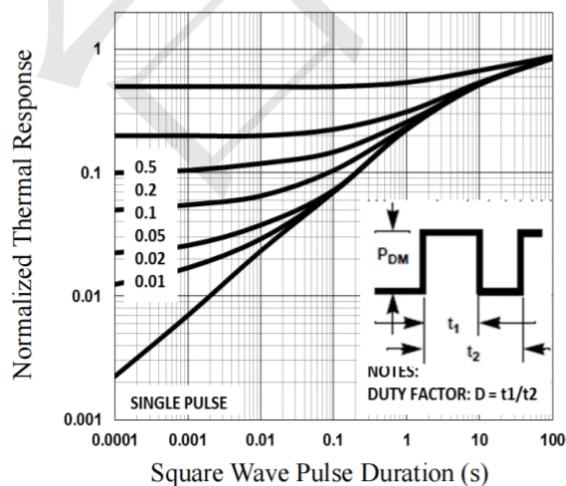


Fig.5 Normalized Transient Impedance

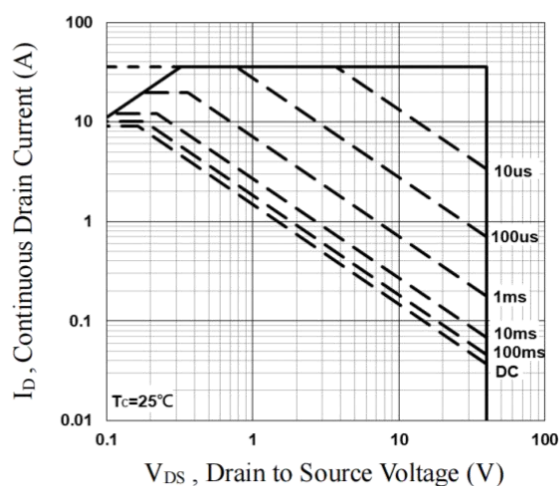
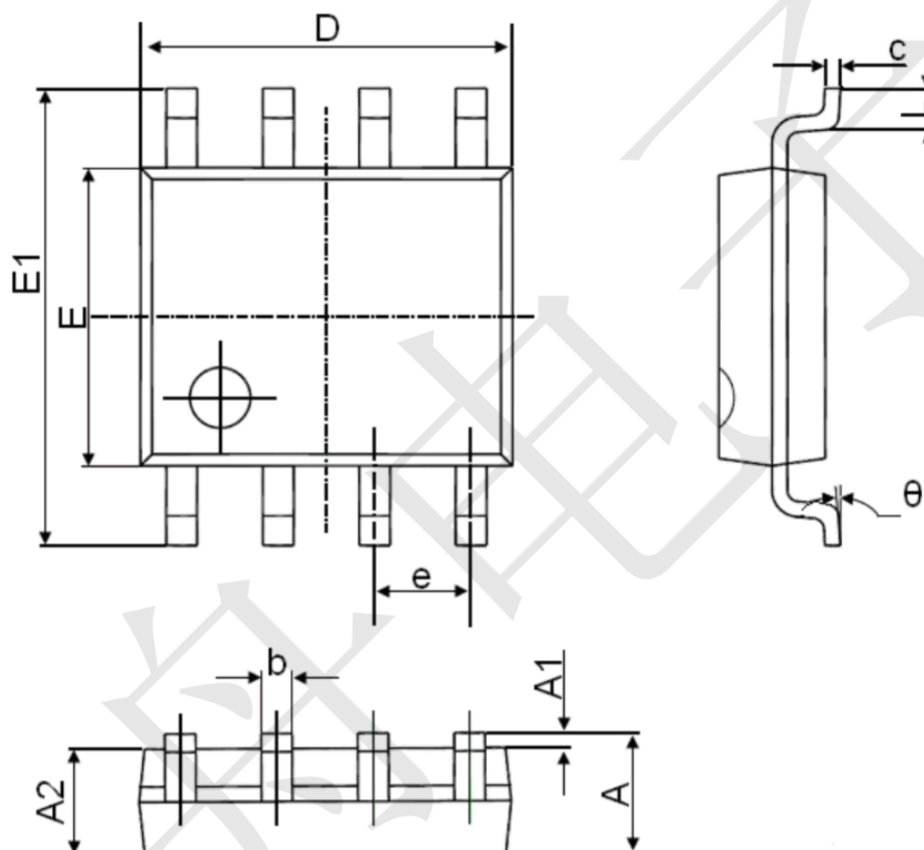


Fig.6 Maximum Safe Operation Area

Package Information

SOP-8



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°