

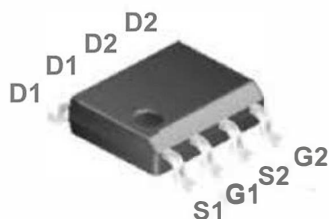
Product Summary

- $V_{DS} = 40V$ $I_D = -8 A$
- $R_{DS(ON)} < -20m\Omega$ @ $V_{GS}=10 V$
- $R_{DS(ON)} < -25 m\Omega$ @ $V_{GS}=4.5V$

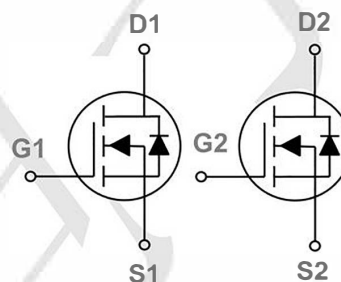
Application

- DC-DC Converters.
- Load Switch.
- Power Management.

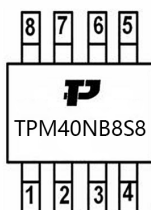
Package and Pin Configuration



Circuit diagram



Marking:



Absolute Maximum Ratings $T_c=25^\circ C$ unless otherwise noted

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	40	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Drain Current – Continuous ($T_A=25^\circ C$)	8	A
	Drain Current – Continuous ($T_A=70^\circ C$)	6.4	A
I_{DM}	Drain Current – Pulsed ¹	32	A
EAS	Single Pulse Avalanche Energy ²	4.9	mJ
IAS	Single Pulse Avalanche Current ²	9.9	A
P_D	Power Dissipation ($T_A=25^\circ C$)	2	W
	Power Dissipation – Derate above $25^\circ C$	0.016	W/ $^\circ C$
T_{STG}	Storage Temperature Range	-50 to 150	$^\circ C$
T_J	Operating Junction Temperature Range	-50 to 150	$^\circ C$

Thermal Characteristics

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction to ambient	---	62.5	$^\circ C/W$

Electrical Characteristics ($T_J=25^\circ\text{C}$, unless otherwise noted)

Off Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V$, $I_D=250\mu A$	40	---	---	V
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=40V$, $V_{GS}=0V$, $T_J=25^\circ\text{C}$	---	---	1	μA
		$V_{DS}=32V$, $V_{GS}=0V$, $T_J=125^\circ\text{C}$	---	---	10	μA
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 20V$, $V_{DS}=0V$	---	---	± 100	nA

On Characteristics

$R_{DS(ON)}$	Static Drain-Source On-Resistance	$V_{GS}=10V$, $I_D=8A$	---		20	$m\Omega$
		$V_{GS}=4.5V$, $I_D=4A$	---		25	$m\Omega$
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}$, $I_D=250\mu A$	1.2	1.6	2.5	V
g_{fs}	Forward Transconductance	$V_{DS}=10V$, $I_D=1A$	---	5	---	S

Dynamic and switching Characteristics

Q_g	Total Gate Charge ^{2,3}	$V_{DS}=32V$, $V_{GS}=10V$, $I_D=3A$	---	10.8	21.6	nC
Q_{gs}	Gate-Source Charge ^{2,3}		---	1.6	3.2	
Q_{gd}	Gate-Drain Charge ^{2,3}		---	3.3	6.6	
$T_{d(on)}$	Turn-On Delay Time ^{2,3}	$V_{DD}=15V$, $V_{GS}=10V$, $R_G=3.3\Omega$ $I_D=1A$	---	3.8	7.6	ns
T_r	Rise Time ^{2,3}		---	10.5	21	
$T_{d(off)}$	Turn-Off Delay Time ^{2,3}		---	22.2	45	
T_f	Fall Time ^{2,3}		---	6.6	13.2	
C_{iss}	Input Capacitance	$V_{DS}=25V$, $V_{GS}=0V$, $F=1\text{MHz}$	---	724	1450	pF
C_{oss}	Output Capacitance		---	70	140	
C_{rss}	Reverse Transfer Capacitance		---	109	220	
R_g	Gate resistance	$V_{GS}=0V$, $V_{DS}=0V$, $F=1\text{MHz}$	---	2.6	---	Ω

Drain-Source Diode Characteristics and Maximum Ratings

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	$V_G=V_D=0V$, Force Current	---	---	8	A
I_{SM}	Pulsed Source Current		---	---	16	A
V_{SD}	Diode Forward Voltage	$V_{GS}=0V$, $I_S=1A$, $T_J=25^\circ\text{C}$	---	---	1	V

Typical Performance Characteristics ($T_A=25^\circ\text{C}$ unless otherwise Specified)

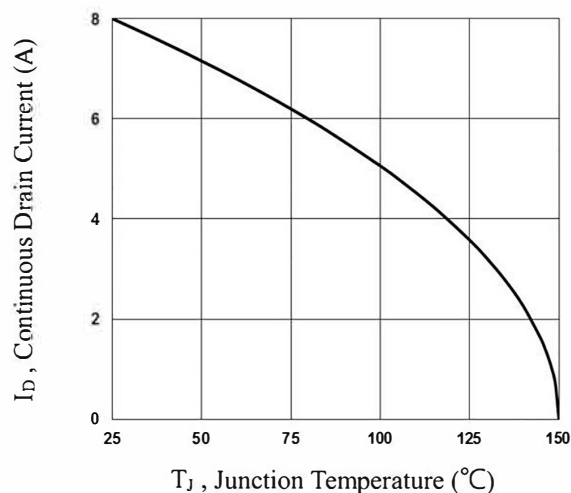


Fig.1 Continuous Drain Current vs. T_c

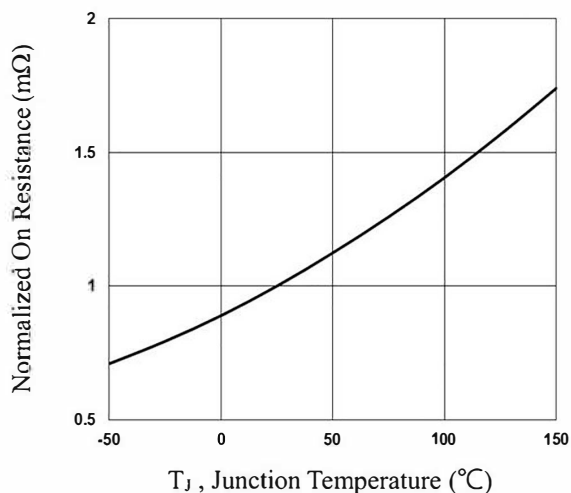


Fig.2 Normalized $R_{DS(on)}$ vs. T_J

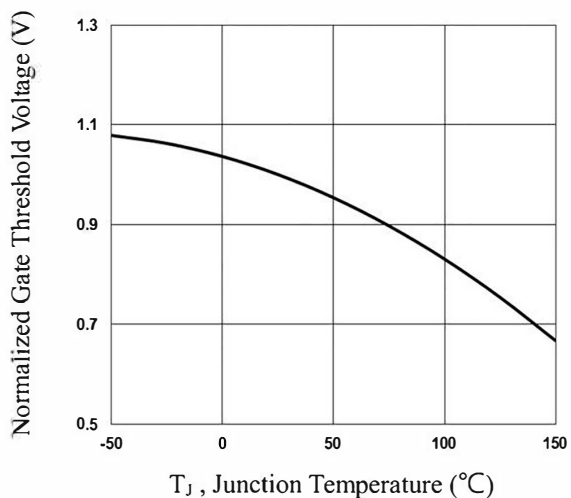


Fig.3 Normalized V_{th} vs. T_J

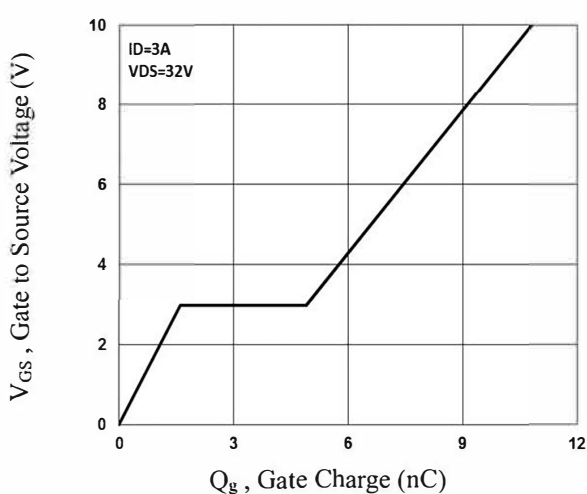


Fig.4 Gate Charge Waveform

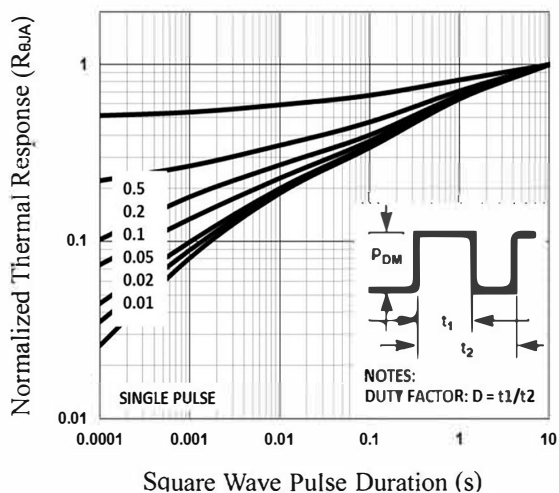


Fig.5 Normalized Transient Impedance

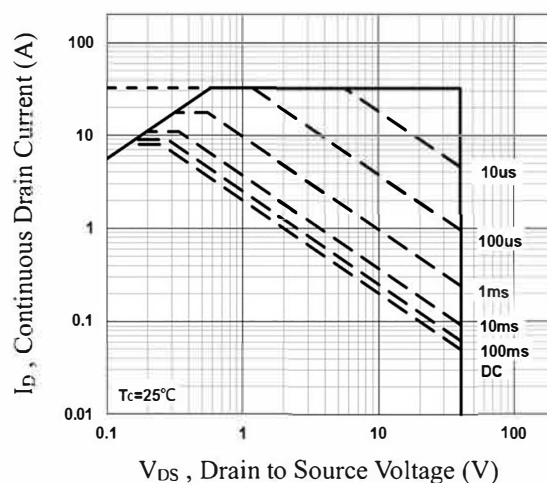
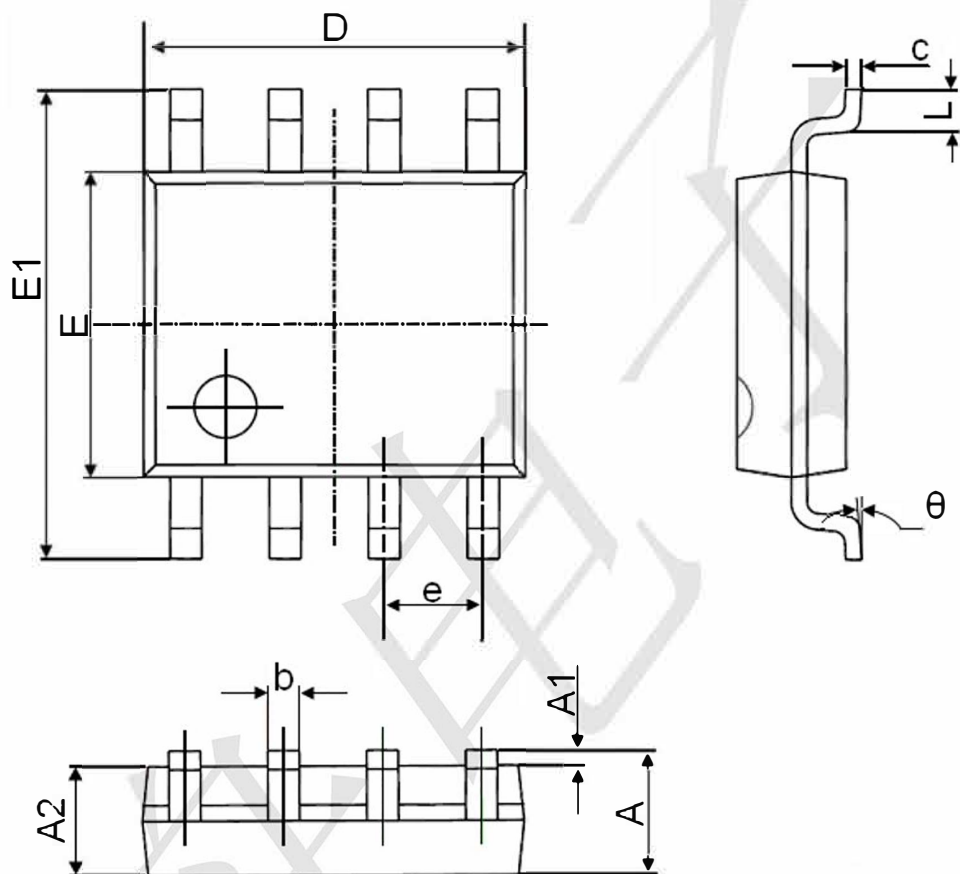


Fig.6 Maximum Safe Operation Area

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°