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TPM40NB8S8

40V Dual N-Channel MOSFETs

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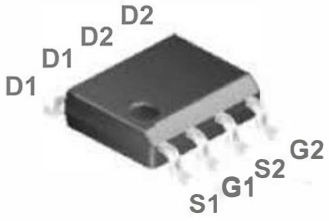
Product Summary

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

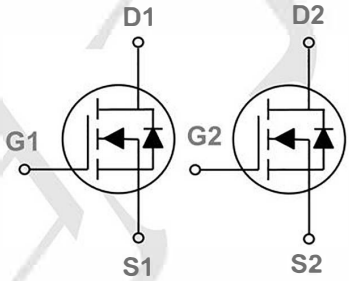
Application

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

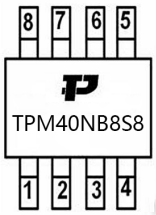
Package and Pin Configuration



Circuit diagram



Marking:



Absolute Maximum Ratings Tc=25℃ 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℃)	8	A
	Drain Current – Continuous (T_A=70℃)	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℃)	2	W
	Power Dissipation – Derate above 25℃	0.016	W/℃
T_{STG}	Storage Temperature Range	-50 to 150	℃
T_J	Operating Junction Temperature Range	-50 to 150	℃

Thermal Characteristics

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

Electrical Characteristics (T_J=25 ℃, unless otherwise noted)

Off Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V , I_D=250uA	40	---	---	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=40V , V_{GS}=0V , T_J=25℃	---	---	1	uA
		V_{DS}=32V , V_{GS}=0V , T_J=125℃	---	---	10	uA
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±20V , V_{DS}=0V	---	---	±100	nA

On Characteristics

$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS}=10V , I_D=8A	---		20	mΩ
		V_{GS}=4.5V , I_D=4A	---		25	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =250uA	1.2	1.6	2.5	V
gfs	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=3.3Ω 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=1MHz	---	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=1MHz	---	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℃	---	---	1	V

Typical Performance Characteristics (T_A=25°C unless otherwise Specified)

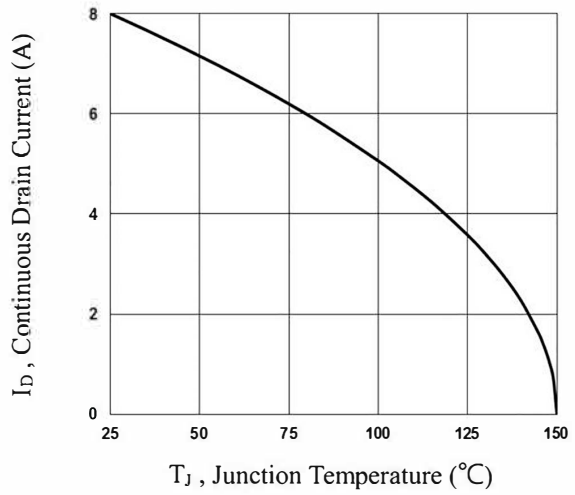


Fig.1 Continuous Drain Current vs. T_C

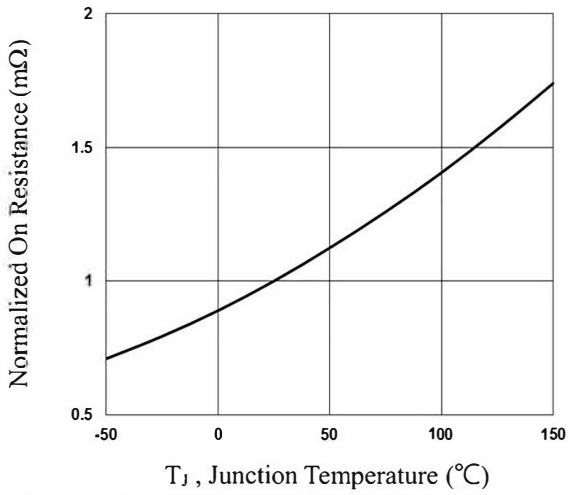


Fig.2 Normalized RDSON vs. T_J

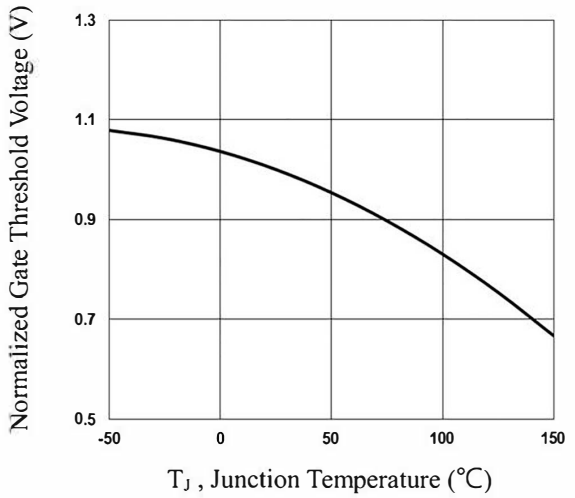


Fig.3 Normalized V_{th} vs. T_J

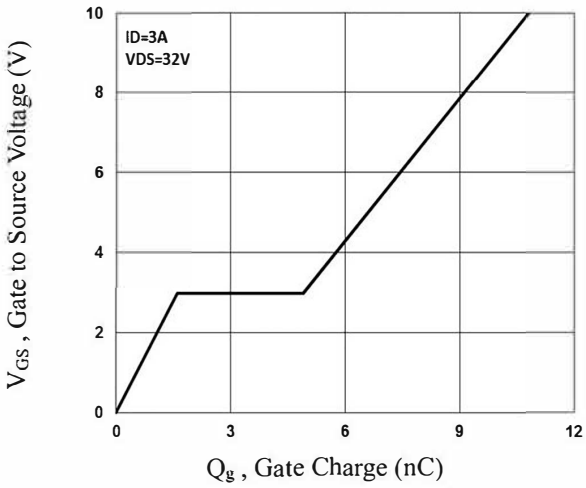


Fig.4 Gate Charge Waveform

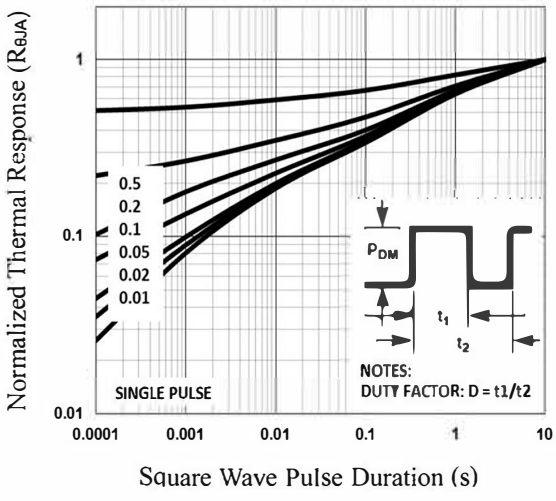


Fig.5 Normalized Transient Impedance

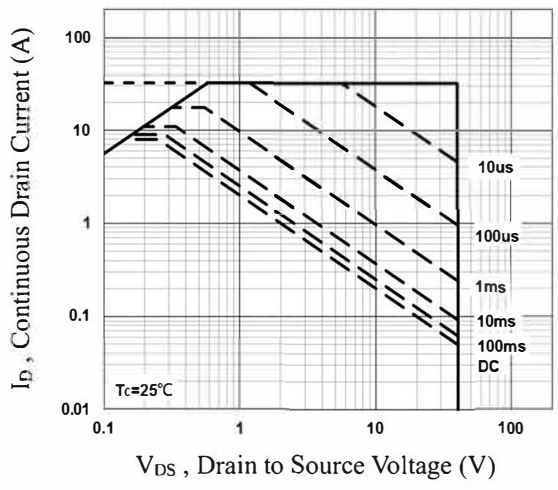
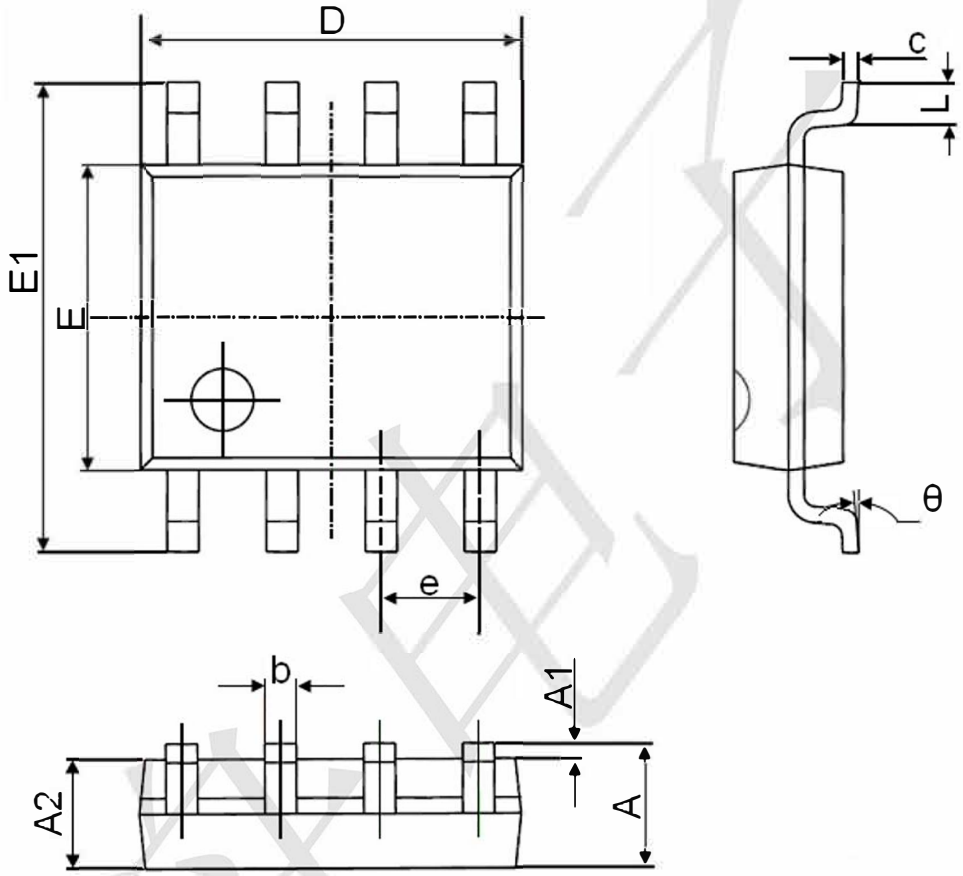


Fig.6 Maximum Safe Operation Area

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°

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