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TPM30PB30D8
Dual P-Channel MOSFET

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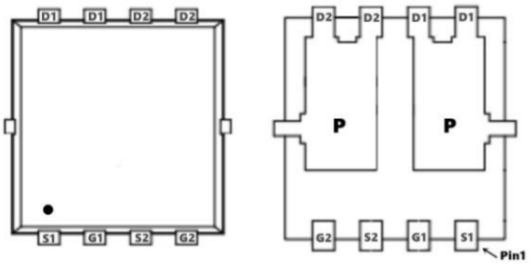
Product Summary

- V_{DS} -30 V
- I_{DS} (at V_{GS}=-10V) -30A
- $R_{DS\ (ON)}$ (at V_{GS}=-10V) ≤20mΩ

Application

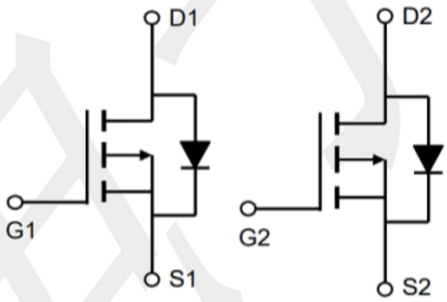
- Reverse Battery protection
- Load switch
- Power management
- PWM Application

Package and Pin Configuration



PDFN3X3-8

Circuit diagram



Absolute Maximum Ratings (T_A=25℃unless otherwise noted)

PARAMETER		SYMBOL	LIMIT	UNIT
Drain-Source Voltage		V_{DS}	-30	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current	T_C=25℃	I_D	-35	A
	T_C=100℃		-22	
Pulsed Drain Current		I_{DM}	-70	A
Single Pulse Avalanche Energy		EAS	72	mJ
Total Power Dissipation	T_C=25℃	P_{DTOT}	35	W
Operating Junction Temperature Range		T_J	-55 to +150	℃
Storage Temperature Range		T_{stg}	-55 to +150	℃

Thermal Characteristic

PARAMETER		Symbol	Value	Unit
Junction-to-Ambient Thermal Resistance	PCB Mount (Note)	$R_{\theta JA}$	62	°C/W
Thermal Resistance Junction-Case		$R_{\theta JC}$	3.6	°C/W

Note : The data tested by surface mounted on a 1 inch2 FR-4 board with 2OZ copper.

Electrical Characteristics (T_A=25℃unless otherwise noted)

PARAMETER	CONDITIONS	SYMBOL	MIN	TYP	MAX	UNIT
Static						
Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=-250μA	BV_{DSS}	-30	--	--	V
Gate-Source Threshold Voltage	V_{DS}=V_{GS},I_D=-250μA	$V_{GS(th)}$	-1.2	-1.5	-2.5	V
Gate-Source Leakage	V_{DS}=0V, V_{GS}= ±20V	I_{GSS}	--	--	±100	nA
Zero Gate Voltage Drain Current	V_{DS}= -30V, V_{GS}=0V	I_{DSS}	--	-0.1	-1.0	μA
	V_{DS}=-30V, T_J=55°C		--	-1.0	-5.0	μA
Drain-Source On-State Resistance (Note 1)	V_{GS}= -10V, I_D= -10A	R_{DS}(on)	--	16	22	mΩ
	V_{GS}=-4.5V, I_D= -5A		--	25	30	
Gate Resistance	VDS=0V, VGS=0V, f=1MHz	Rg	--	2.2	--	Ω
Dynamic (Note 2)						
Total Gate Charge (Note 3)	V_{DS} = -15V,	Q_g	--	30	--	nC
Gate-Source Charge (Note 3)	I_D = -9.1A,	Q_{gs}	--	5.3	--	
Gate-Drain Charge (Note 3)	V_{GS} = -10V	Q_{gd}	--	7.6	--	
Input Capacitance	V_{DS} = -15V,	C_{iss}	--	1550	--	pF
Output Capacitance	V_{GS} = 0V,	C_{oss}	--	327	--	
Reverse Transfer Capacitance	F= 1.0MHz	C_{rss}	--	278	--	
Switching						
Turn-On Delay Time (Note 3)	V_{DD} = -15V,	$t_{d(on)}$	--	14	--	nS
Rise Time (Note 3)	I_D= -6A,	t_r	--	20	--	
Turn-Off Delay Time (Note 3)	V_{GS} = -10V,	$t_{d(off)}$	--	95	--	
Fall Time (Note 3)	R_G = 2.5Ω	t_f	--	65	--	
Source-Drain Diode Ratings and Characteristics (Note 2)						
Forward Voltage	V_{GS} = 0V, I_F = -1A	V_{SD}	--	-0.8	-1.2	V
Continuous Source Current	Integral reverse diode in the MOSFET	I_S	--	--	-40	A
Pulsed Current (Note 1)		I_{SM}	--	--	-40	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 Electrical and Thermal Characteristics

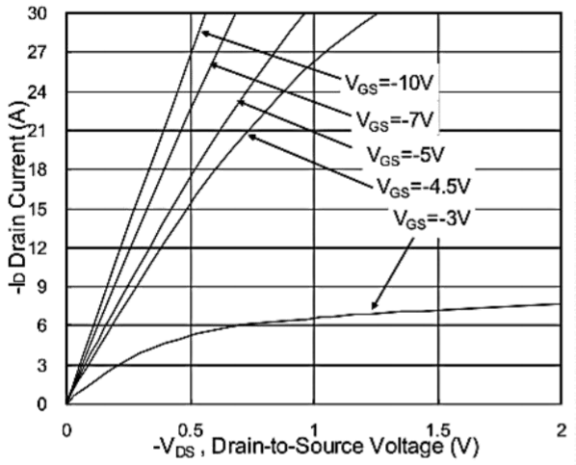


Fig.1 Typical Output Characteristics

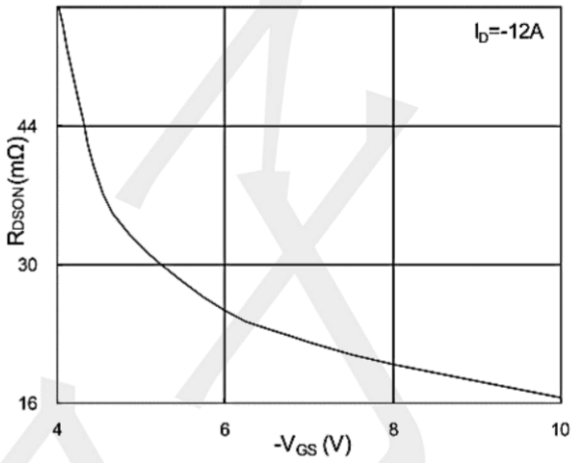


Fig.2 On-Resistance v.s Gate-Source

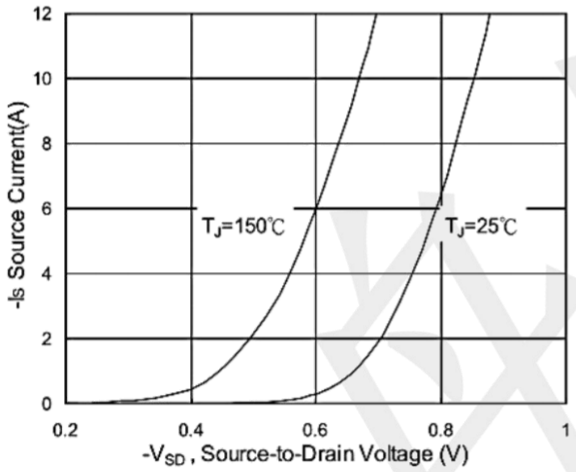


Fig.3 Forward Characteristics of Reverse

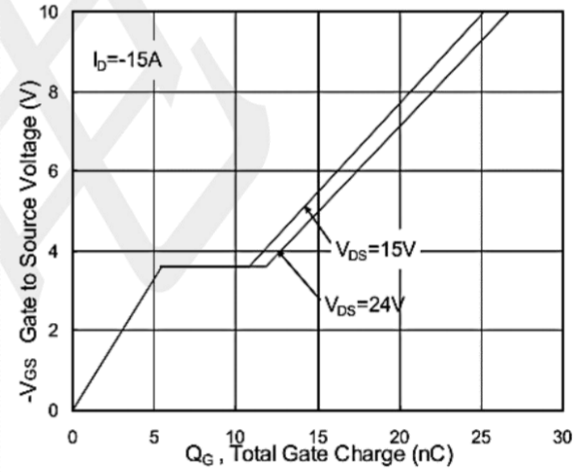


Fig.4 Gate-Charge Characteristics

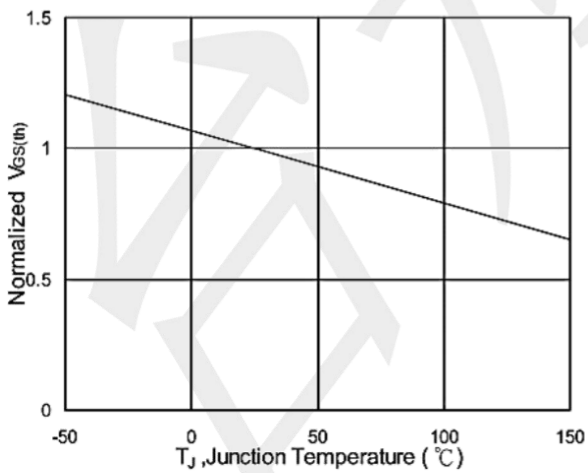


Fig.5 Normalized $V_{GS(th)}$ v.s T_J

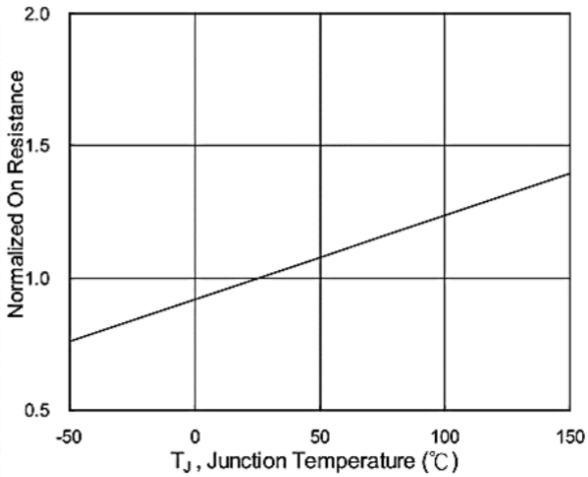


Fig.6 Normalized R_{DSON} v.s T_J

Typical Performance Characteristics

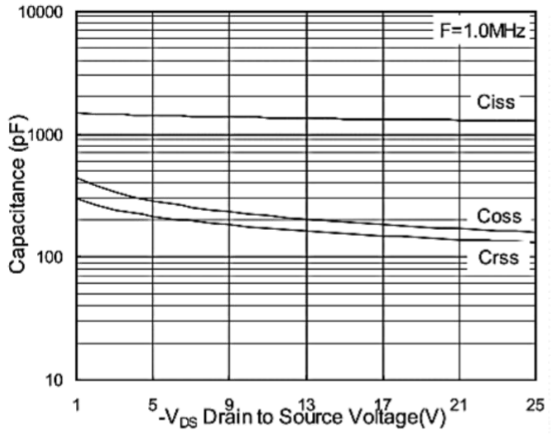


Fig.7 Capacitance

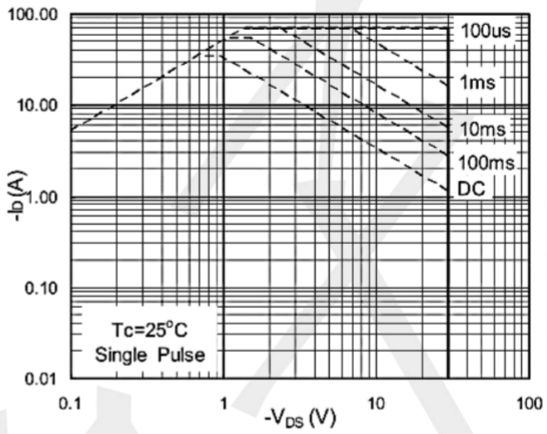


Fig.8 Safe Operating Area

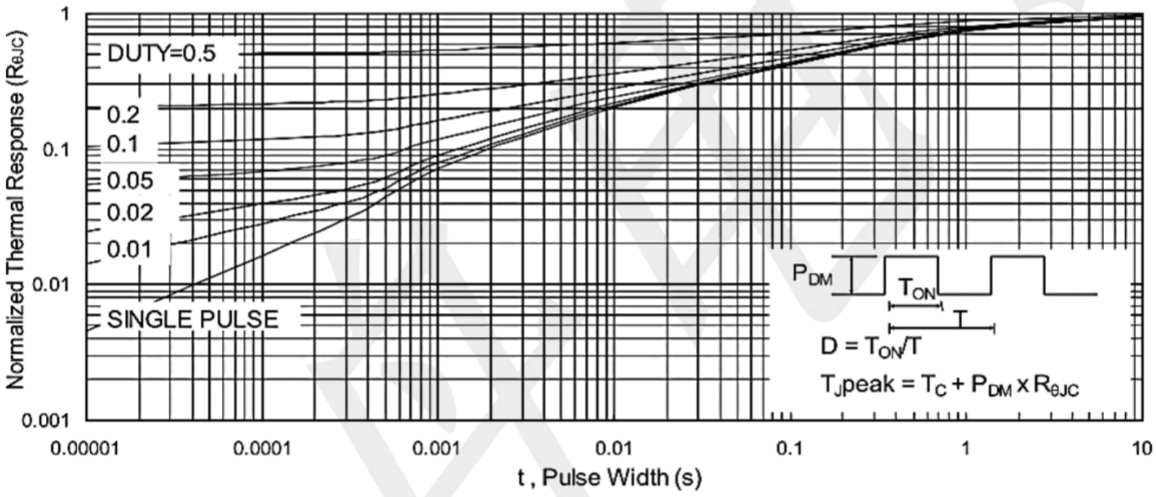


Fig.9 Normalized Maximum Transient Thermal Impedance

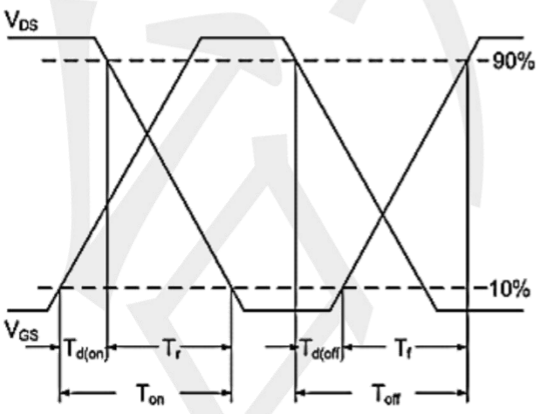


Fig.10 Switching Time Waveform

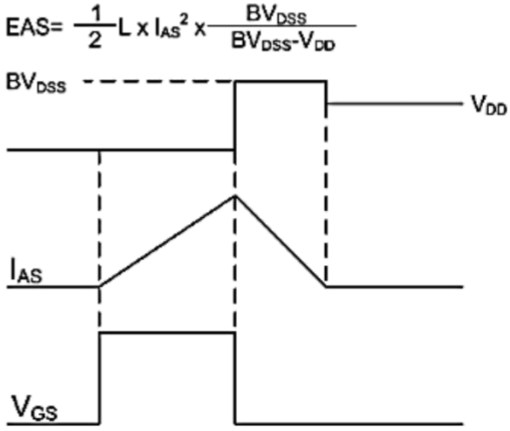
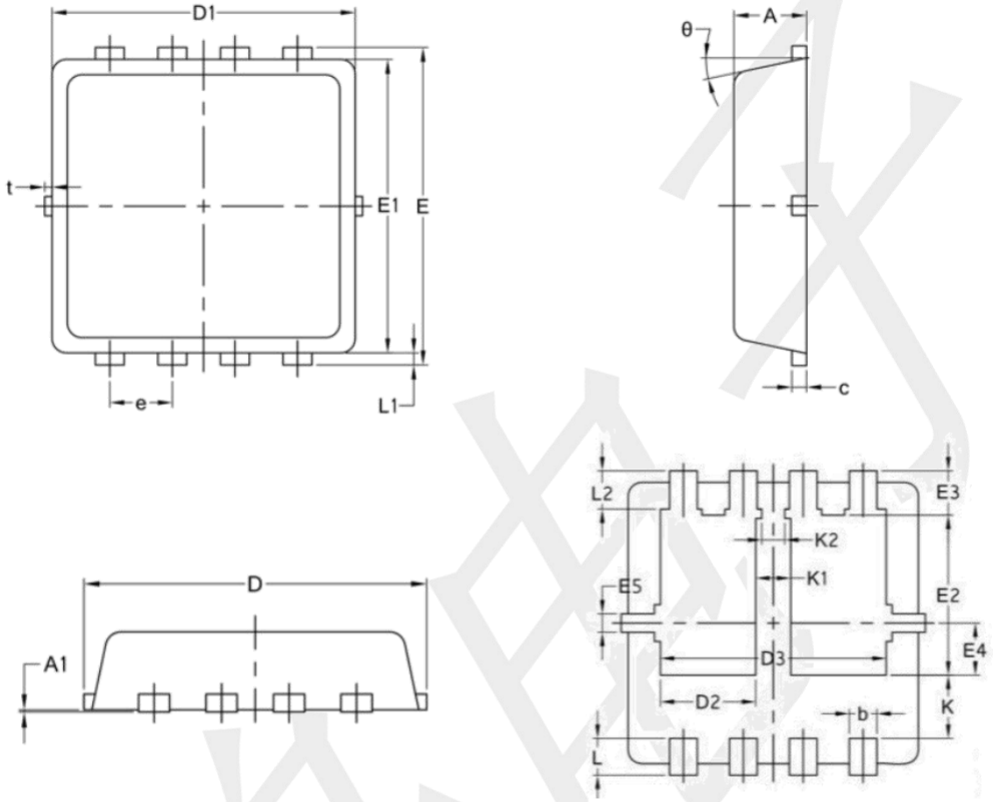


Fig.11 Unclamped Inductive Switching Waveform

Package Information

PDFN3X3-8



Symbol	Common		
	Mm		
	Min	Nom	Max
A	0.70	0.75	0.85
A1	/	/	0.05
b	0.25	0.30	0.39
c	0.14	0.152	0.20
D	3.20	3.30	3.45
D1	3.05	3.15	3.25
D2	0.84	1.04	1.24
D3	2.30	2.45	2.60
E	3.20	3.30	3.40
E1	2.95	3.05	3.15
E2	1.60	1.74	1.90
E3	0.28	0.48	0.65
E4	0.37	0.57	0.77
E5	0.10	0.20	0.30
e	0.60	0.65	0.70
K	0.50	0.69	0.80
K1	0.30	0.38	0.53
K2	0.15	0.25	0.35
L	0.30	0.40	0.50
L1	0.06	0.125	0.20
L2	0.27	0.42	0.57
t	0	0.075	0.13
Φ	10°	12°	14°