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TPM4408ND8-1

N-Channel Enhancement Mode MOSFET

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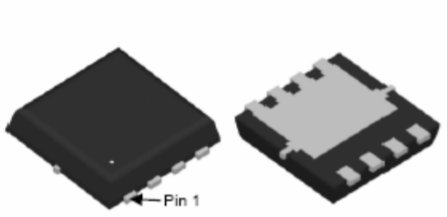
Features

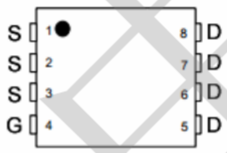
- $R_{DS(ON)}$, V_{GS}@10V,<9mΩ
- $R_{DS(ON)}$, V_{GS}@4.5V,<13mΩ
- High switching speed
- Improved dv/dt capability
- Low Gate Charge
- Low reverse transfer capacitance
- Lead free in compliance with EU RoHS 2.0

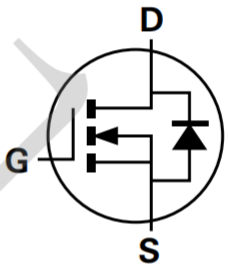
Application

- Load/Power Switching
- Interfacing Switching
- Battery Management for Ultra Small Portable Electronics
- Logic Level Shift

Package and Pin Configuration







Marking:4408

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

PARAMETER		SYMBOL	LIMIT	UNITS
Drain-Source Voltage		V_{DS}	30	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current	T_C=25°C	I_D	42	A
	T_C=100°C		26	
Pulsed Drain Current(Note 1)	T_C=25°C	I_{DM}	168	
Power Dissipation	T_C=25°C	P_D	35	W
	T_C=100°C		14	
Operating Junction andStorage Temperature Range		T_J,T_{STG}	-55~150	°C
Typical Thermal Resistance(Note 4,5)	Junction to Case	$R_{\theta JC}$	3.6	°C/W
	Junction to Ambient	$R_{\theta JA}$	62.5	

Electrical Characteristics (T_A=25℃unless otherwise noted)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNITS
Static						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V,I_D=250uA	30	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=250uA	1.0	1.7	2.5	
Drain-Source On-State Resistance	$R_{DS(on)}$	V_{GS}=10V,I_D=16A	-	6.5	9	mΩ
		V_{GS}=4.5V,I_D=8A	-	9.5	13	
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=30V,V_{GS}=0V	-	-	1.0	uA
Gate-Source Leakage Current	I_{GSS}	V_{GS}=±20V,V_{DS}=0V	-	-	±100	nA
Dynamic (Note 6)						
Total Gate Charge	Q_g	V_{DS}=15V, I_D=20A, V_{GS}=4.5V (Note 2,3)	-	7.1	-	nC
Gate-Source Charge	Q_{gs}		-	3.1	-	
Gate-Drain Charge	Q_{gd}		-	2.0	-	
Input Capacitance	Ciss	V_{DS}=25V, V_{GS}=0V, f=1.0MHZ	-	763	-	pF
Output Capacitance	Coss		-	132	-	
Reverse Transfer Capacitance	Crss		-	81	-	
Turn-On Delay Time	$td_{(on)}$	V_{DS}=15V, I_D=15A, V_{GS}=10V, R_G=6Ω (Note 2,3)	-	5.4	-	ns
Turn-On Rise Time	t_r		-	86	-	
Turn-Off Delay Time	$td_{(off)}$		-	20	-	
Turn-Off Fall Time	t_f		-	10	-	
Drain-Source Diode						
Maximum Continuous Drain-Source Diode Forward Current	I_S	---	-	-	42	A
Diode Forward Voltage	V_{SD}	I_S=1A,V_{GS}=0V	-	0.7	1.0	V

Typical Characteristics

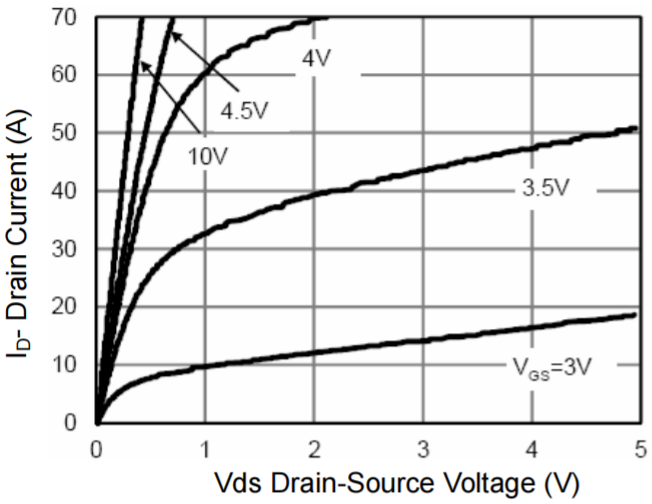


Figure 1 Output Characteristics

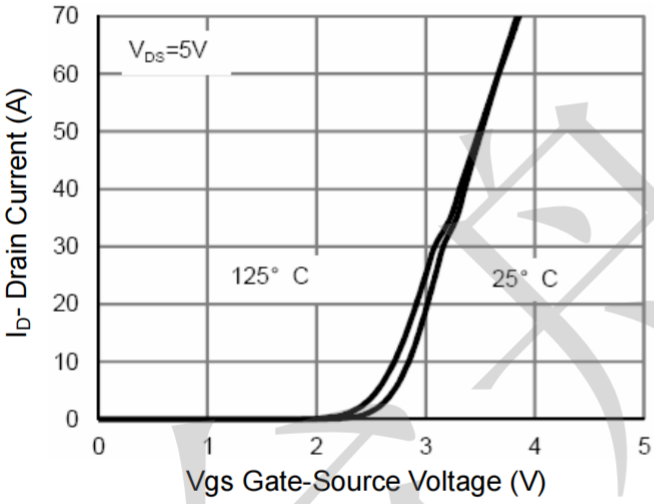


Figure 2 Transfer Characteristics

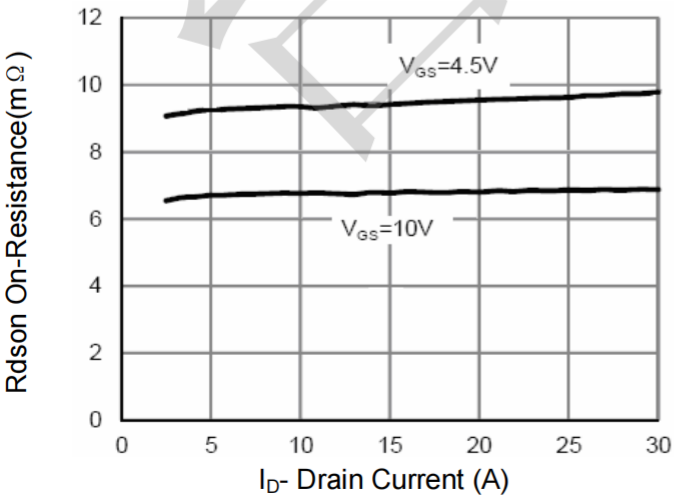


Figure 3 Rdson- Drain Current

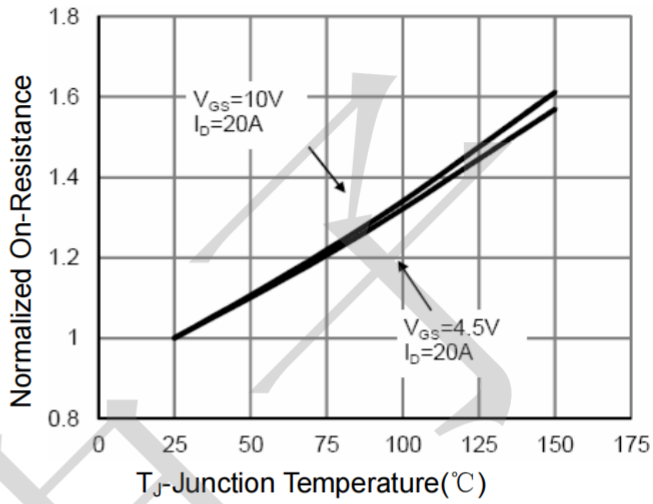


Figure 4 Rdson-Junction Temperature

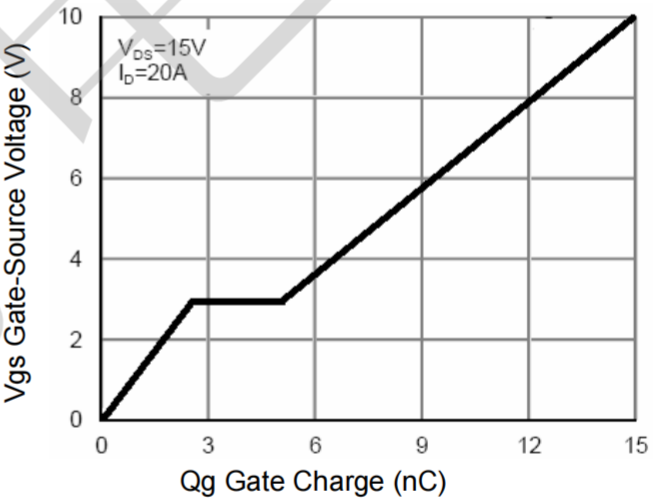


Figure 5 Gate Charge

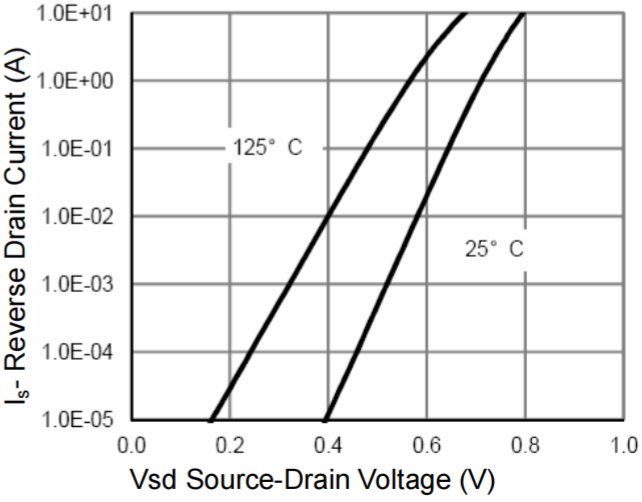


Figure 6 Source- Drain Diode Forward

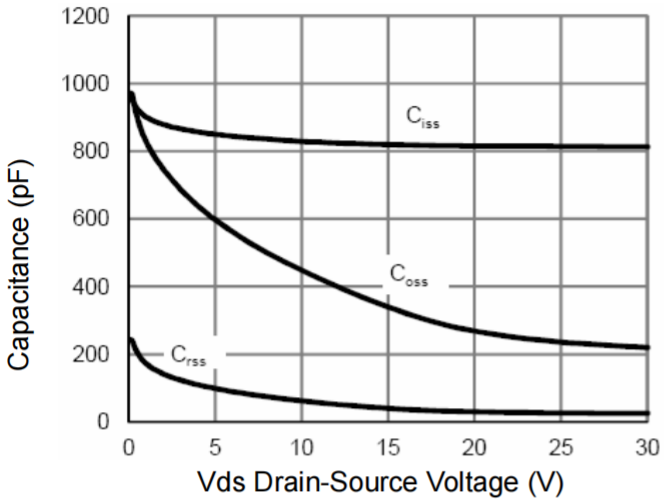


Figure 7 Capacitance vs Vds

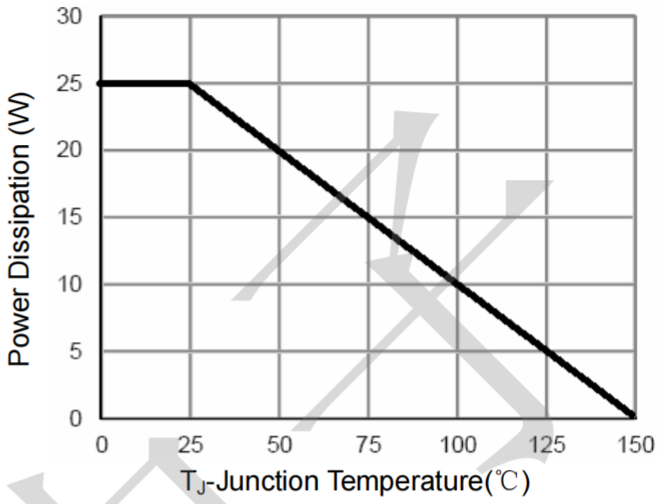


Figure 9 Power De-rating

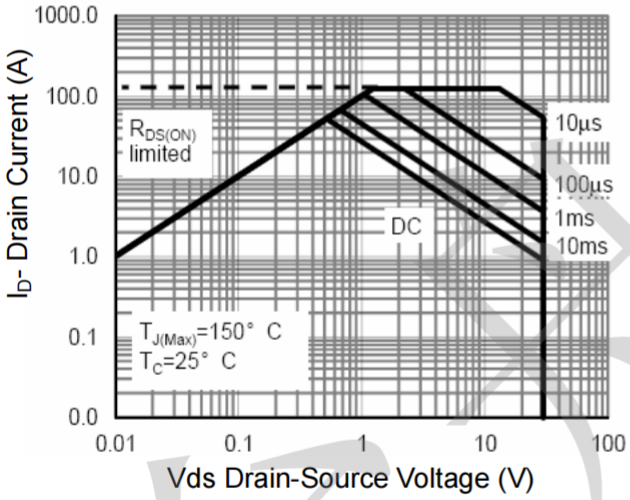


Figure 8 Safe Operation Area

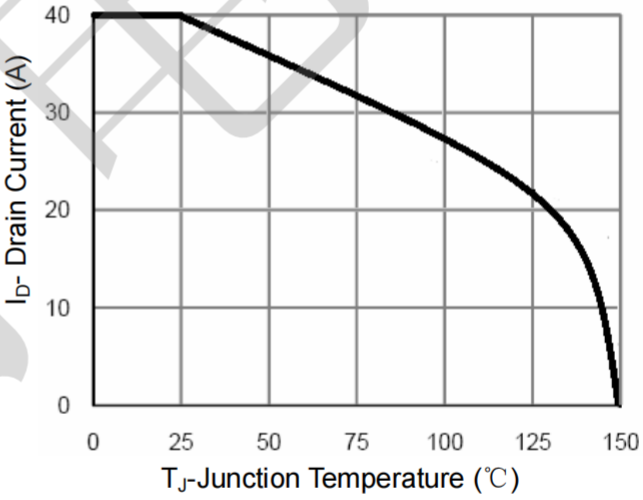


Figure 10 Current De-rating

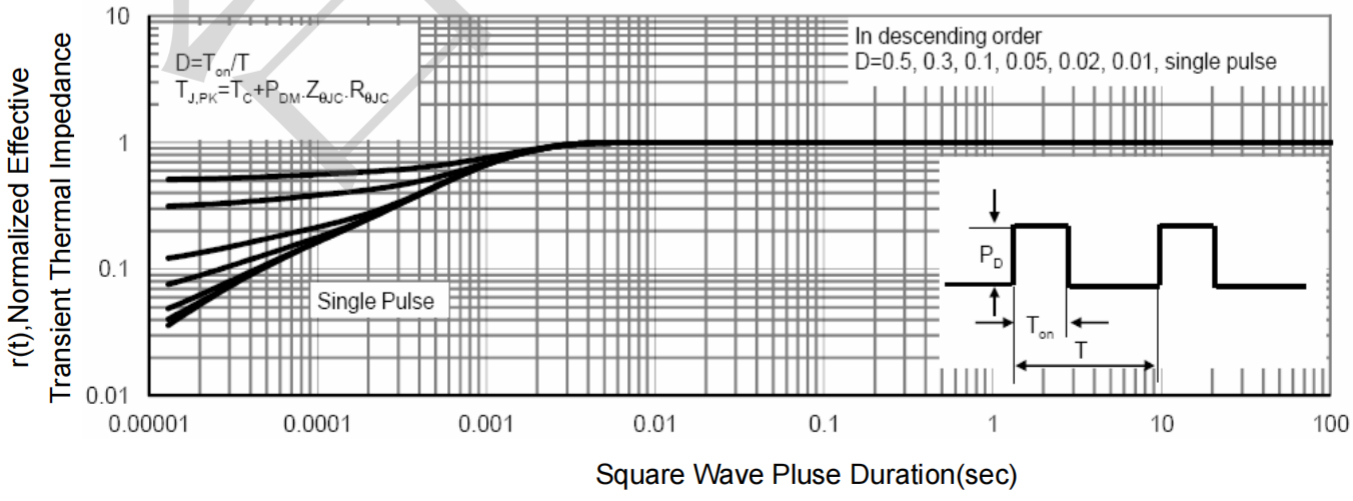
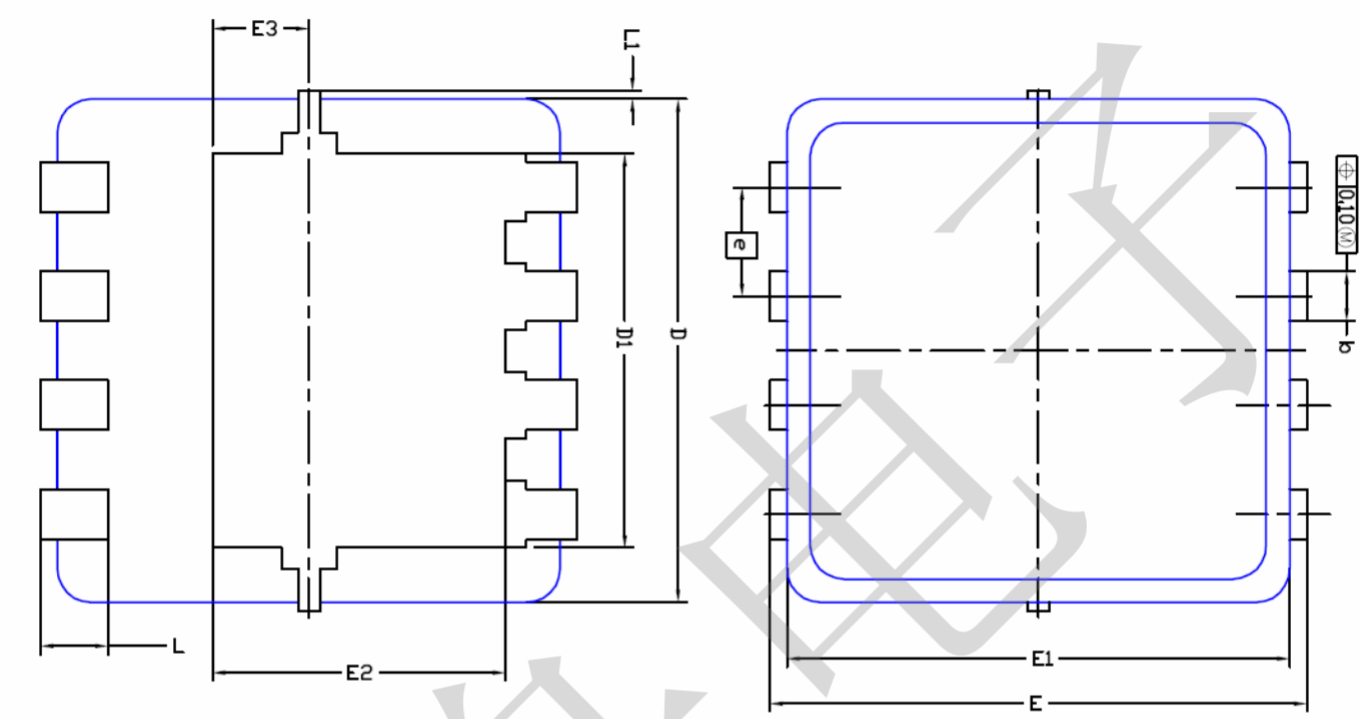
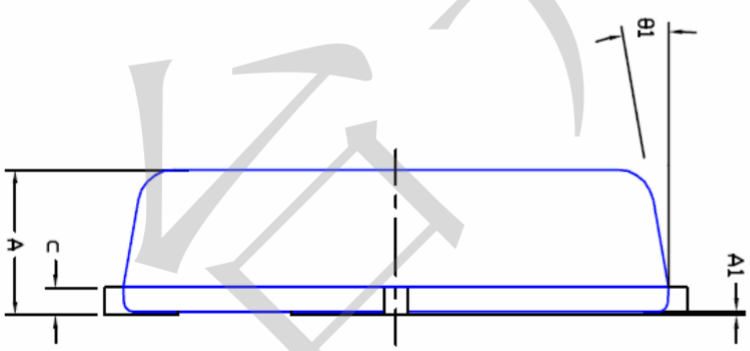


Figure 11 Normalized Maximum Transient Thermal Impedance

DFN3X3 Package Information





DIM.	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.700	0.80	0.900	0.0276	0.0315	0.0354
A1	0.00	---	0.05	0.000	---	0.002
b	0.24	0.30	0.35	0.009	0.012	0.014
c	0.10	0.152	0.25	0.004	0.006	0.010
D	3.00 BSC			0.118 BSC		
D1	2.35 BSC			0.093 BSC		
E	3.20 BSC			0.126 BSC		
E1	3.00 BSC			0.118 BSC		
E2	1.75 BSC			0.069 BSC		
E3	0.575 BSC			0.023 BSC		
e	0.65 BSC			0.026 BSC		
L	0.30	0.40	0.50	0.0118	0.0157	0.0197
L1	0	---	0.100	0	---	0.004
θ1	0°	10°	12°	0°	10°	12°