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TPAOD2N100
1000V N-Channel MOSFET

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Product Summary

- V_{DS} 1100 V
- I_{DS} 2.0A
- $R_{DS\ (ON)}$ (at V_{GS}=10V) <7.5Ω (Typ.)
- Low Gate Charge Minimize Switching Loss

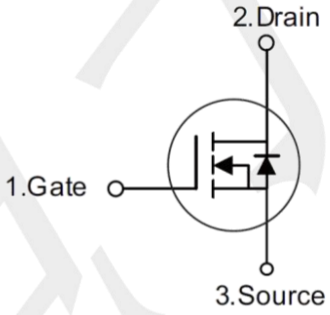
Application

- Adaptor
- Charger
- Power management
- SMPS Standby Power

Package and Pin Configuration

T0-252

Circuit diagram



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

PARAMETER	SYMBOL	Value	UNIT
Drain-Source Voltage	V_{DS}	1000	V
Gate-Source Voltage	V_{GS}	±30	V
Continuous Drain Current	I_D	2.0	A
Pulsed Drain Current	I_{DM}	7.0	A
Single Pulse Avalanche Energy(VDD=50V)	E_{AS}	65	mJ
Maximum Power Dissipation	P_D	83	W
Operating Junction Temperature Range	T_J	+150	℃
Storage Temperature Range	T_{stg}	-55 to +150	℃

Thermal Characteristic

PARAMETER		Symbol	Value	Unit
Thermal Resistance,Junction to Case	PCB Mount (Note1)	$R_{\theta JC}$	1.5	°C/W
Thermal Resistance, Junction-to-Ambient	PCB Mount (Note1)	$R_{\theta JA}$	55	°C/W

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

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 Tj=25℃	BV_{DSS}	1000	--	--	V
	V_{GS}=0V, I_D=250μA Tj=150℃		--	1100	--	V
Gate-Source Threshold Voltage	V_{DS}=V_{GS} , I_D=250μA	$V_{GS(th)}$	2.5	--	5.0	V
Gate-Source Leakage	V_{DS}=0V, V_{GS}= ±30V	I_{GSS}	--	--	±100	nA
Zero Gate Voltage Drain Current	V_{DS}= 120V, V_{GS}=0V	I_{DSS}	--	--	1	μA
Drain-Source On-State Resistance (Note 1)	V_{GS}= 10V, I_D= 1.0A	R_{DS}(on)	--	7.5	9.0	Ω
Dynamic (Note 2)						
Total Gate Charge (Note 3)	V_{DS} = 960V, I_D =2.0A, V_{GS} = 10V	Q_g	--	23.5	--	nC
Gate-Source Charge (Note 3)		Q_{gs}	--	3.5	--	
Gate-Drain Charge (Note 3)		Q_{gd}	--	15	--	
Input Capacitance	V_{DS} = 25V, V_{GS} = 0V, F= 1.0MHz	C_{iss}	--	634	--	pF
Output Capacitance		C_{oss}	--	62	--	
Reverse Transfer Capacitance		C_{rss}	--	7	--	
Switching						
Turn-On Delay Time (Note 3)	V_{DD} = 600V, I_D= 2.0A, V_{GS} = 10V, R_G = 25Ω	$t_{d(on)}$	--	30	--	nS
Rise Time (Note 3)		t_r	--	17	--	
Turn-Off Delay Time (Note 3)		$t_{d(off)}$	--	75.5	--	
Fall Time (Note 3)		t_f	--	51	--	
Source-Drain Diode Ratings and Characteristics (Note 2)						
Forward Voltage	V_{GS} = 0V, I_S = 1.5A	V_{SD}	--	0.8	1.4	V
Continuous Source Current	Integral reverse diode in the MOSFET	I_S	--	--	2.0	A
Pulsed Current (Note 1)		I_{SM}	--	--	7.0	A
Reverse recovery time	V_{GS}=0V ,I_F=2.0A, diF/dt=-100A/μs	trr	--	1200	--	nS
Reverse recovery charge		Qrr	--	3.95	--	nC

Notes:

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

TYPICAL CHARACTERISTICS (T_A=25℃unless otherwise noted)

Figure 1. Output Characteristics (T_J = 25℃)

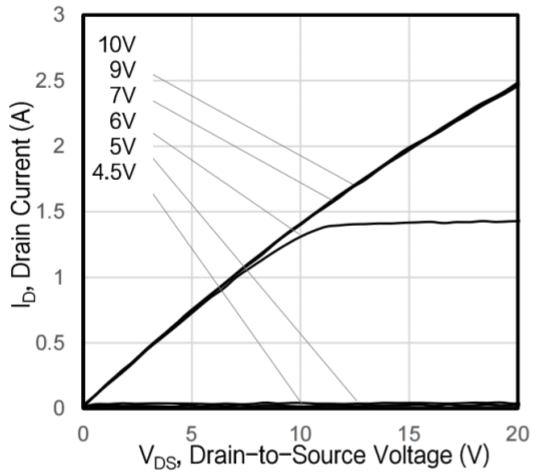


Figure 2.Body Diode Forward Voltage

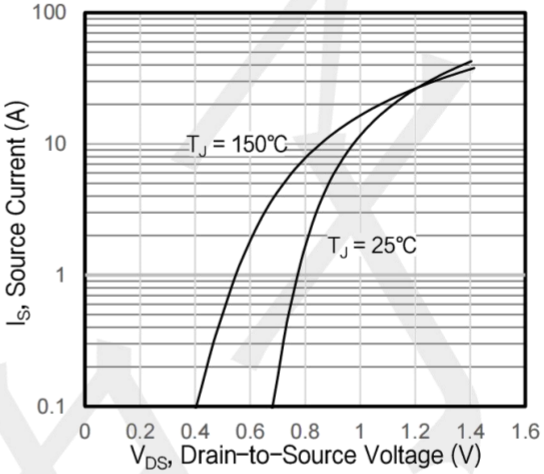


Figure 3. Drain Current vs. Temperature

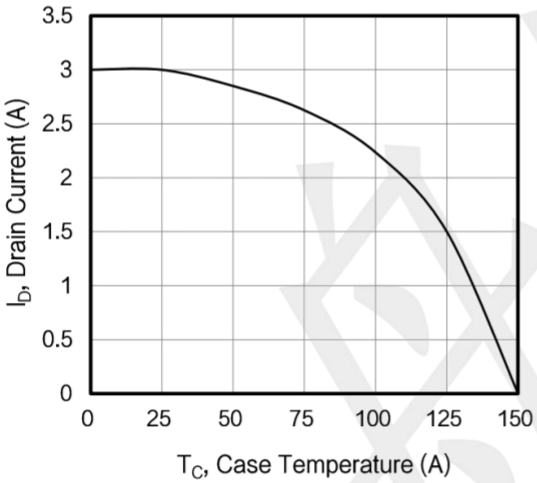


Figure 4. BV_{DSS} Variation vs. Temperature

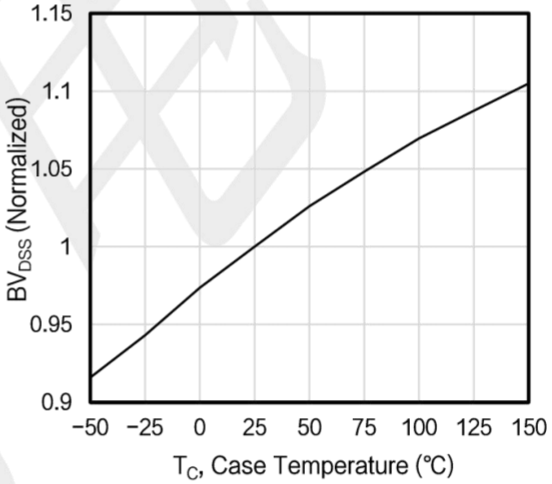


Figure 5. Transfer Characteristics

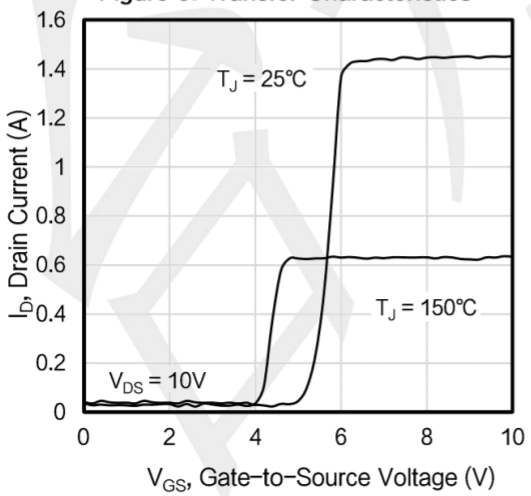
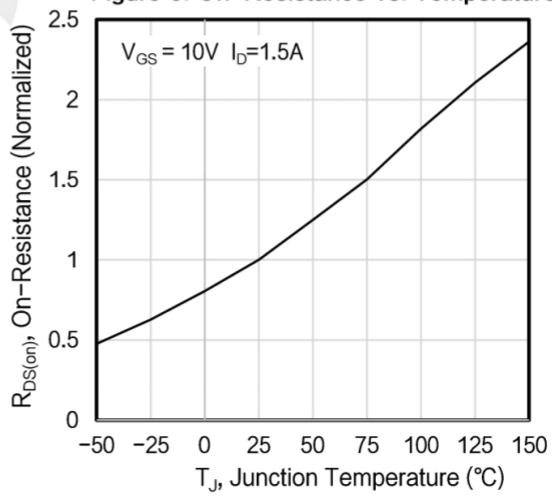


Figure 6. On-Resistance vs. Temperature



TYPICAL CHARACTERISTICS (T_A=25℃unless otherwise noted)

Figure 7. Capacitance

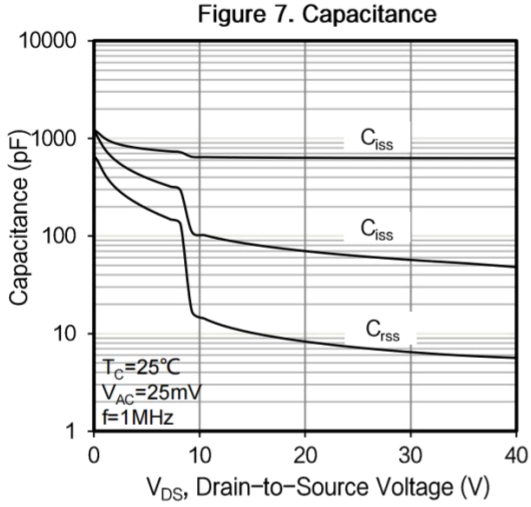


Figure 8. Gate Charge

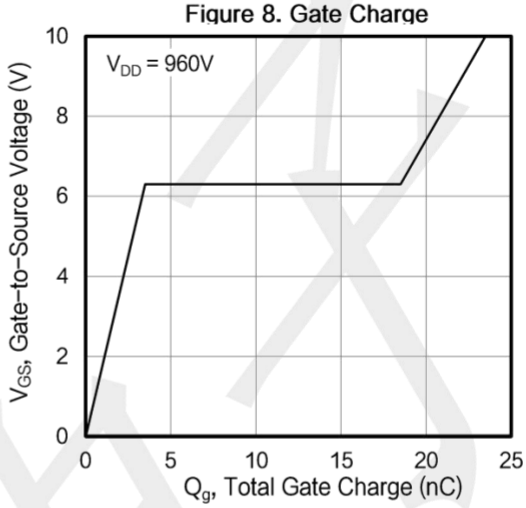


Fig.9 Threshold Voltage vs. Temperature

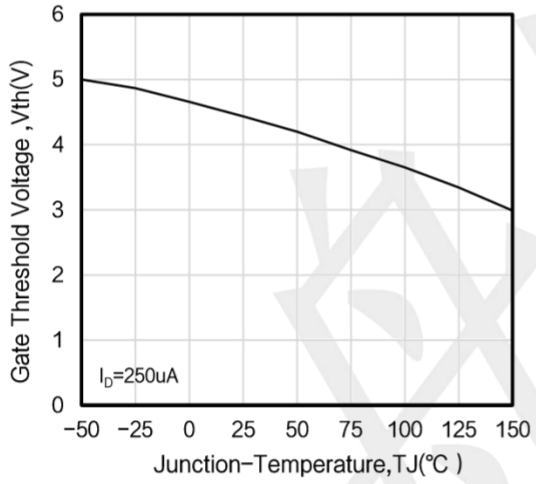


Figure 10. Transient Thermal Impedance

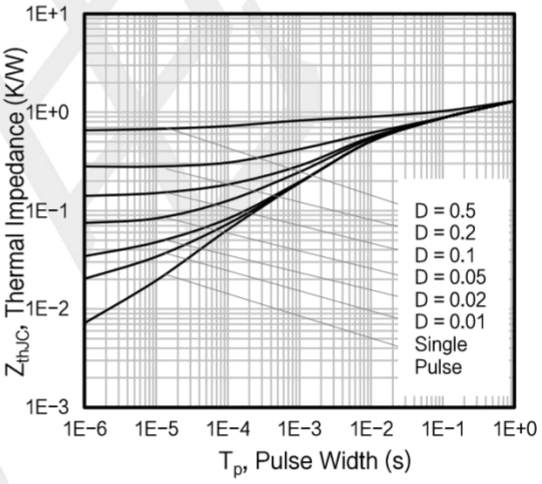
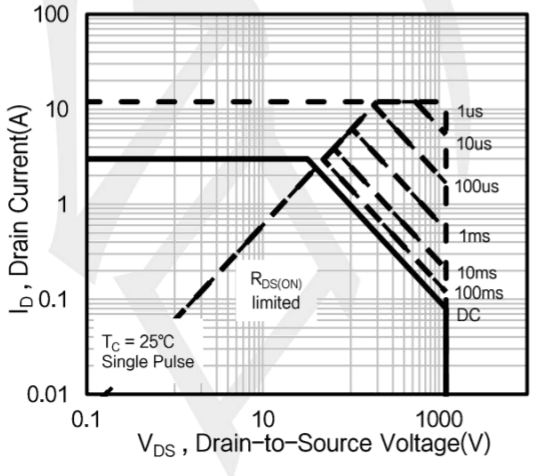
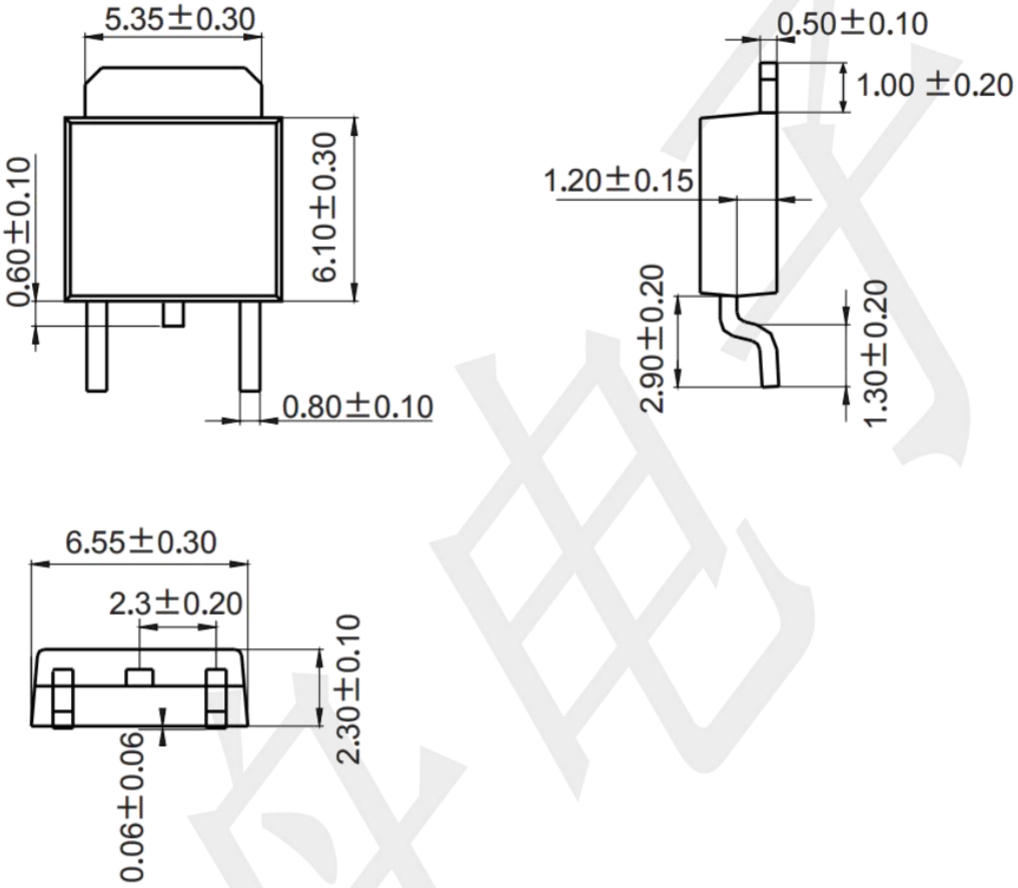


Fig.11 Safe Operating Area



Package Outline Dimensions (unit: mm)

TO-252



Mounting Pad Layout (unit: mm)