

100V N-Channel Enhancement Mode MOSFET

Voltage	100 V	Rdson	12.6 mΩ
Current	56 A	Qg	18 nC

Feature:

- $R_{DS(ON)} < 12.6 \text{ m}\Omega$ @ $V_{GS}=10\text{V}, I_D=30\text{A}$
- High Speed Switching and Low $R_{DS(ON)}$
- Low reverse transfer capacitance
- 100% UIS / Rg test in mass production
- Lead free in compliance with EU RoHS 2.0
- Green molding compound as per IEC 61249 standard

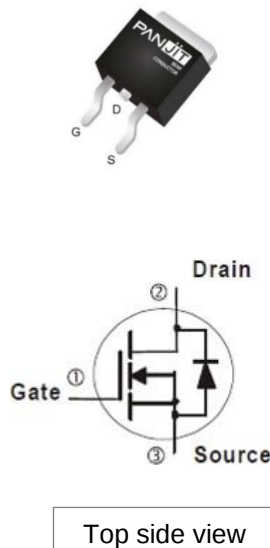
Mechanical Data

- Case: TO-252AA package
- Terminals: Solder able per MIL-STD-750, Method 2026
- Approx. Weight: 0.3217 grams

Application

- SR Solutions of Power supply

TO-252AA



Absolute Maximum Ratings ($T_A = 25^\circ\text{C}$ unless otherwise specified)

PARAMETER		SYMBOL	LIMIT	UNITS
Drain-Source Voltage		V_{DS}	100	
Gate-Source Voltage		V_{GS}	± 20	
Continuous Drain Current (note 3)	$T_C=25^\circ\text{C}$	I_D	56	A
	$T_C=100^\circ\text{C}$		39	
Pulsed Drain Current (note 1)	$T_C=25^\circ\text{C}$	I_{DM}	200	A
Single Pulse Avalanche Energy (note 5)		E_{AS}	81	mJ
Power Dissipation	$T_C=25^\circ\text{C}$	P_D	69	W
	$T_C=100^\circ\text{C}$		28	
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55~150	$^\circ\text{C}$

Thermal Characteristics

PARAMETER		SYMBOL	VALUES	UNITS
Thermal Resistance	Junction-to-Case (Bottom)	$R_{\theta JC}$	1.8	$^\circ\text{C/W}$
	Junction-to-Ambient (Note 4)	$R_{\theta JA}$	50	$^\circ\text{C/W}$

Electrical Characteristics ($T_A = 25^\circ\text{C}$ unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNITS
Static						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250uA	100	-	-	V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250uA	2.4	2.9	3.6	
Drain-Source On-State Resistance	R _{DS(on)}	V _{GS} =10V, I _D =30A	-	-	12.6	mΩ
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =100V, 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} =50V, I _D =20A, V _{GS} =0V to 10V	-	18	-	nC
Gate-Source Charge	Q _{gs}		-	5.2	-	
Gate-Drain Charge	Q _{gd}		-	4.6	-	
Input Capacitance	C _{iss}	V _{DS} =50V, V _{GS} =0V, f=250KHz	-	1013	-	pF
Output Capacitance	C _{oss}		-	422	-	
Reverse Transfer Capacitance	C _{rss}		-	12	-	
Turn-On Delay Time	td(on)	V _{DD} =50V, I _D =20A, V _{GS} =10V, R _G =6Ω (Note 2)	-	9.64	-	ns
Turn-On Rise Time	tr		-	3.3	-	
Turn-Off Delay Time	td(off)		-	18.2	-	
Turn-Off Fall Time	tf		-	6	-	
Gate Resistance	Rg	f=1.0MHz	-	1.4	-	Ω
Drain-Source Diode						
Diode Forward Voltage	V _{SD}	I _S =30A, V _{GS} =0V	-	-	1.2	V
Reverse Recovery Charge	Q _{rr}	I _S =20A di/dt=100A/μs	-	30	-	uC
Reverse Recovery Time	T _{rr}		-	32	-	ns
NOTES :						
1. Pulse width ≤ 300 μs, Duty cycle ≤ 2 %.						
2. Essentially independent of operating temperature typical characteristics.						
3. The maximum drain current calculated by maximum junction temperature and thermal impedance. It can be varied by application and environment.						
4. RθJA is the sum of the junction-to-case and case-to-ambient thermal resistance where the case thermal reference is defined as the solder mounting surface of the drain pins. Mounted on a 1 inch² with 2oz.square pad of copper.						
5. EAS is calculated based on the condition of L = 0.5 mH, IAS = 18A, VDD = 50 V, VGS = 10 V, Rg =25ohm.						
6. Guaranteed by design, not subject to production testing.						

TYPICAL CHARACTERISTIC CURVES

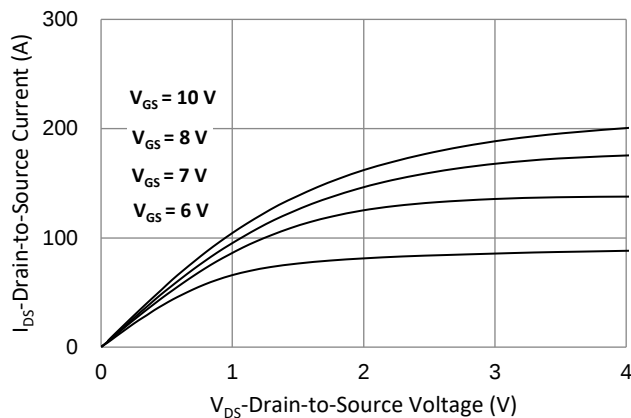


Fig.1 Output Characteristics

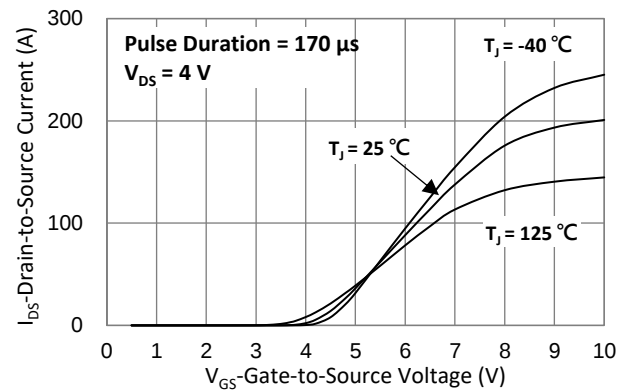


Fig.2 Transfer Characteristics

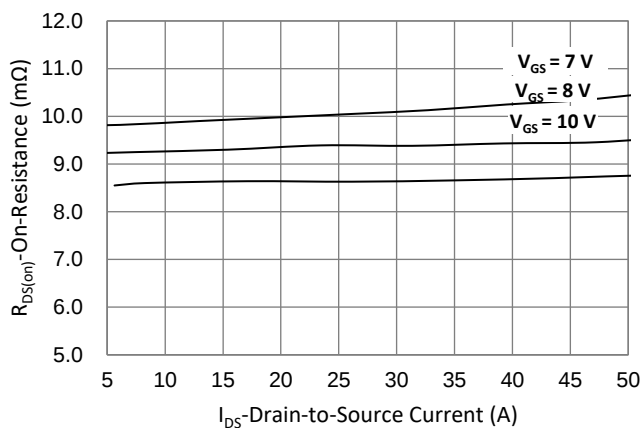


Fig.3 On-Resistance vs. Drain Current

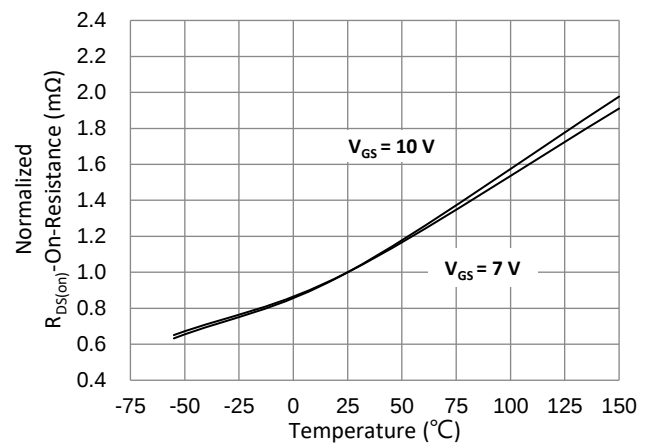


Fig.4 On-Resistance vs. Junction Temperature

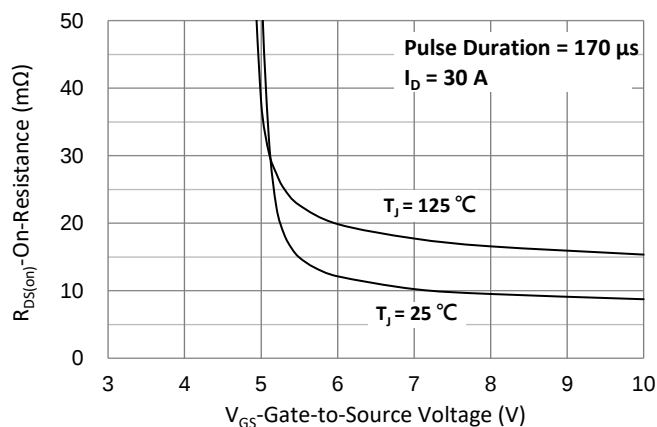


Fig.5 On-Resistance Variation with V_{GS}

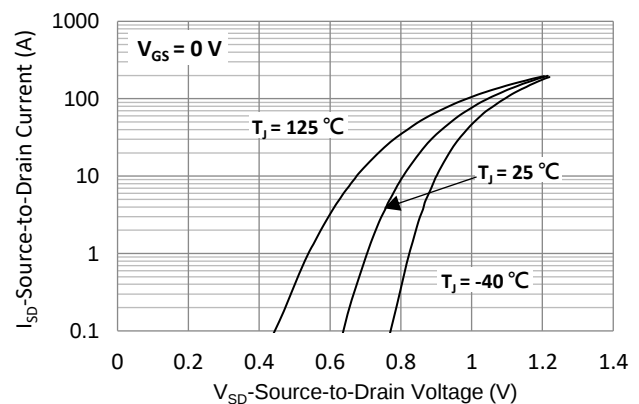


Fig.6 Body Diode Characteristics

TYPICAL CHARACTERISTIC CURVES

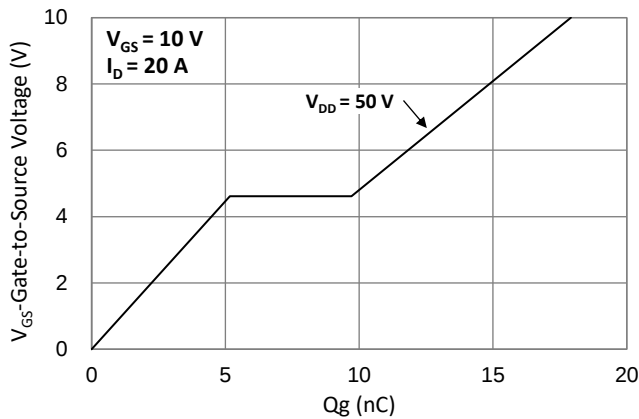


Fig.7 Gate-Charge Characteristics

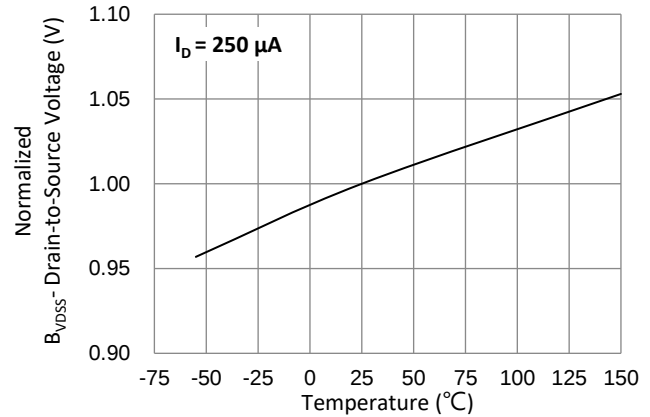


Fig.8 Breakdown Voltage Variation vs. Temperature

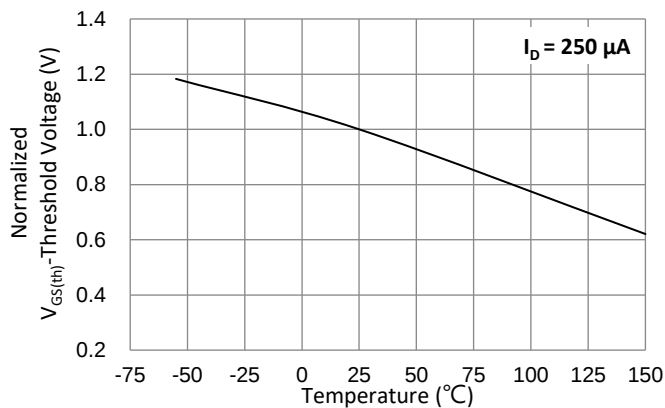


Fig.9 Threshold Voltage Variation with Temperature

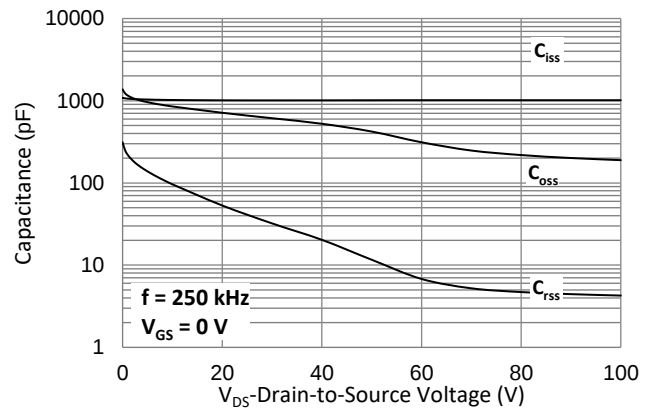


Fig.10 Drain Current vs. Case Temperature

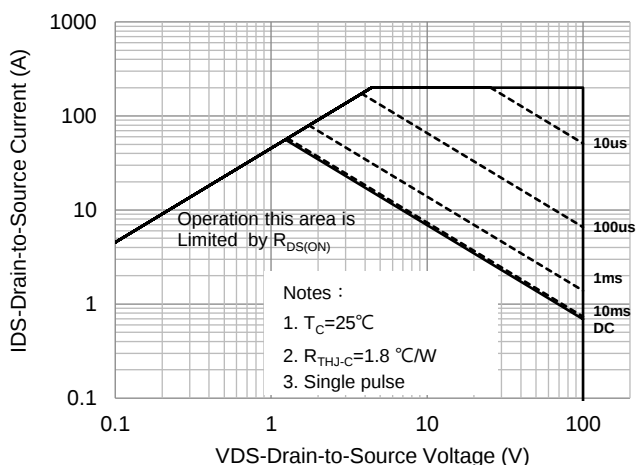


Fig.11 Maximum Safe Operating Area

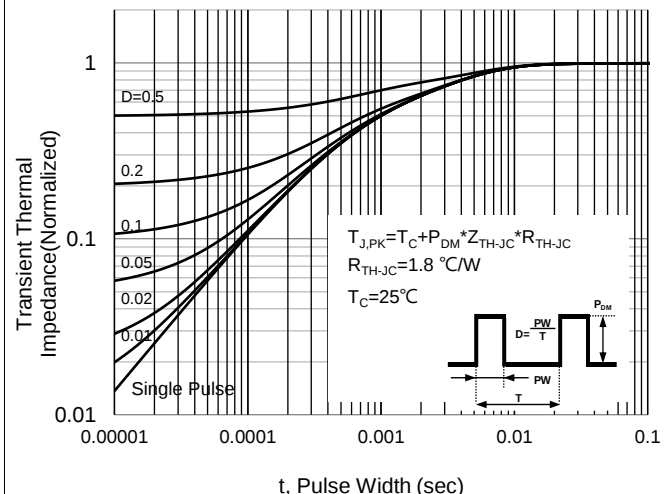
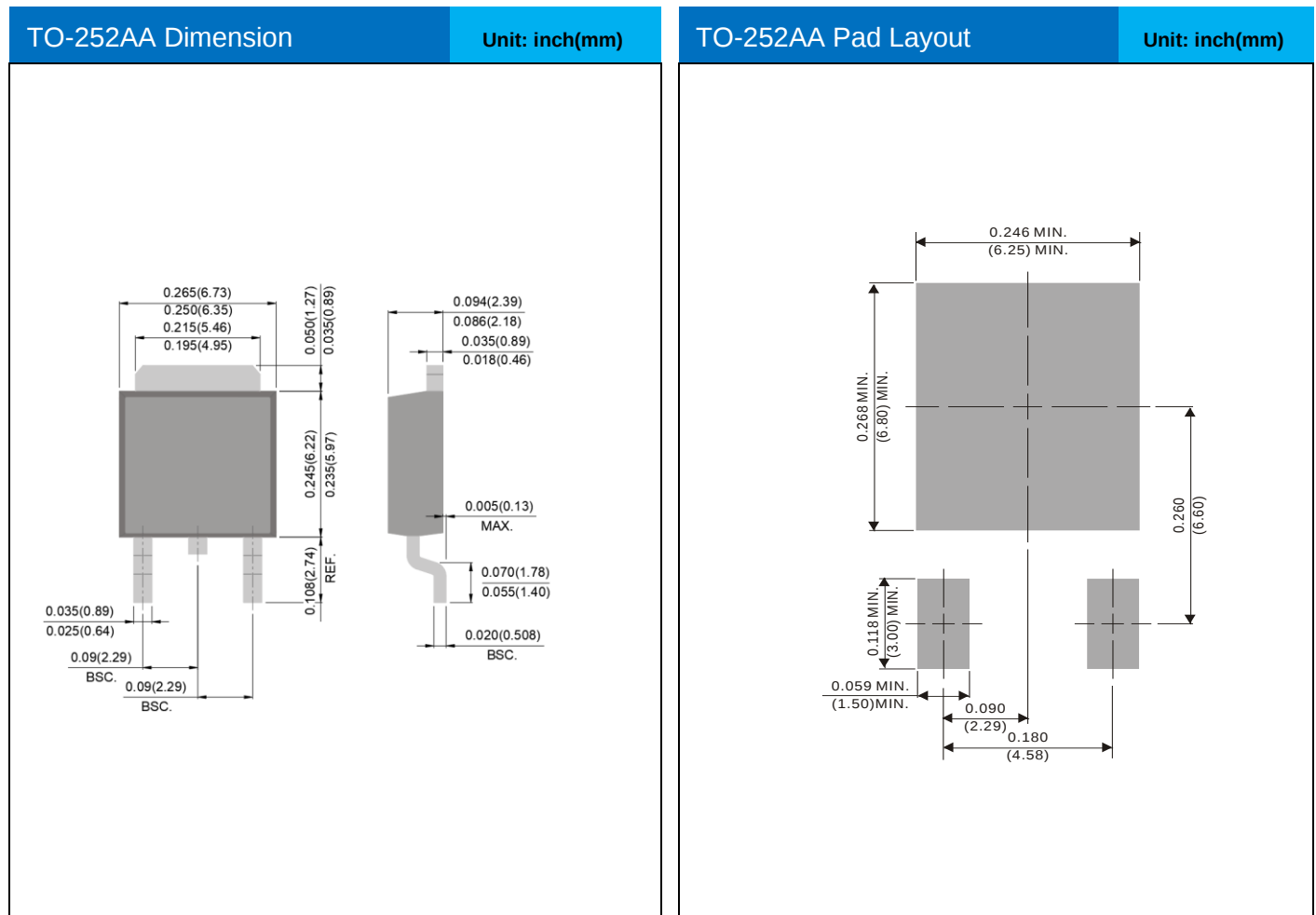


Fig.12 Normalized Transient Thermal Impedance

Product and Packing Information

Part No.	Package Type	Packing Type	Marking
PSMD126N10NSC1	TO-252AA	3,000 pcs / 13" reel	126N10NC

Packaging Information



Marking Diagram

PJ	Y = Year Code
126N10NC	W = Week Code (A~Z)
YWLL x	LL = Lot Code (00~99)
	x = Production Line Code

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