

100V N-Channel Enhancement Mode MOSFET

Voltage 100 V **R_{DS(ON)}** 8.2 mΩ

Current 76 A **Q_G (TYP)** 28.5 nC

Feature

- $R_{DS(ON)} < 8.2 \text{ m}\Omega$ at $V_{GS} = 10 \text{ V}$, $I_D = 35 \text{ A}$
- $R_{DS(ON)} < 12.5 \text{ m}\Omega$ at $V_{GS} = 4.5 \text{ V}$, $I_D = 17.5 \text{ A}$
- High switching speed
- Low reverse transfer capacitance
- Lead free in compliance with EU RoHS 2.0
- Green molding compound as per IEC 61249 standard

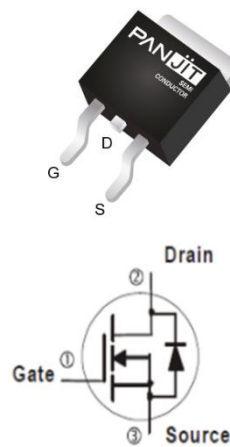
Mechanical Data

- Case: TO-252AA molded plastic
- Terminals: Solderable per MIL-STD-750, Method 2026
- Approx. Weight: 0.3217 grams

Application

- SR solutions of Monitor PSU/ TV PSU .

TO-252AA



Top side view

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

PARAMETER		SYMBOL	LIMIT	UNITS
Drain-Source Voltage		V_{DS}	100	V
Gate-Source Voltage		V_{GS}	± 20	
Continuous Drain Current (Note 3)	$T_C = 25^\circ\text{C}$	I_D	76	A
	$T_C = 100^\circ\text{C}$		54	
Pulsed Drain Current	$T_C = 25^\circ\text{C}$	I_{DM}	304	A
Single Pulse Avalanche Current (Note 5)		I_{AS}	15	A
Single Pulse Avalanche Energy (Note 5)		E_{AS}	48	mJ
Power Dissipation	$T_C = 25^\circ\text{C}$	P_D	100	W
	$T_C = 100^\circ\text{C}$		50	
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55~175	$^\circ\text{C}$

Thermal Characteristics

PARAMETER		SYMBOL	VALUES			UNITS
			MIN.	TYP.	MAX.	
Thermal Resistance	Junction-to-Case (Bottom)	$R_{\theta JC}$	-	1.0	1.5	$^\circ\text{C/W}$
	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 Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0\text{ V}, I_D=250\text{ }\mu\text{A}$	100	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=135\text{ }\mu\text{A}$	1.1	1.7	2.3	
Drain-Source On-State Resistance (Note 1)	$R_{DS(on)}$	$V_{GS}=10\text{ V}, I_D=35\text{ A}$	-	7.3	8.2	m Ω
		$V_{GS}=4.5\text{ V}, I_D=17.5\text{ A}$	-	9.5	12.5	
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=100\text{ V}, V_{GS}=0\text{ V}$	-	-	1	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 20\text{ V}, V_{DS}=0\text{ V}$	-	-	± 100	nA
Transfer characteristics (Note 1)	g_{fs}	$V_{DS}=10\text{ V}, I_D=35\text{ A}$	-	90	-	S
Dynamic Characteristics (Note 6)						
Total Gate Charge	Q_g	$V_{DS}=50\text{ V}, I_D=35\text{ A}, V_{GS}=4.5\text{ V}$	-	14	-	nC
Gate-Source Charge	Q_{gs}	$V_{DS}=50\text{ V}, I_D=35\text{ A}, V_{GS}=10\text{ V}$	-	28.5	37	nC
Gate-Drain Charge	Q_{gd}		-	5.5	-	
Gate Plateau Voltage	$V_{plateau}$		-	3.8	-	
Input Capacitance	C_{iss}	$V_{DS}=50\text{ V}, V_{GS}=0\text{ V}, f=250\text{ kHz}$	-	3.0	-	V
Output Capacitance	C_{oss}		-	1770	2300	pF
Reverse Transfer Capacitance	C_{rss}		-	610	800	
Output Charge	Q_{oss}	$V_{DS}=50\text{ V}, V_{GS}=0\text{ V}$	-	12	-	
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=50\text{ V}, I_D=35\text{ A}, V_{GS}=10\text{ V}, R_G=3.0\text{ }\Omega$ (Note 2)	-	42	55	nC
Rise Time	t_r		-	7.2	-	ns
Turn-Off Delay Time	$t_{d(off)}$		-	3.5	-	
Fall Time	t_f		-	20	-	
Gate Resistance	R_g	$f=1.0\text{ MHz}$	-	3.5	-	Ω
Drain-Source Diode						
Diode Forward Voltage	V_{SD}	$I_S=35\text{ A}, V_{GS}=0\text{ V}$	-	0.9	1.2	V
Reverse Recovery Charge	Q_{rr}	$I_F=35\text{ A}, V_{DD}=50\text{ V},$	-	76	-	nC
Reverse Recovery Time	T_{rr}	$di/dt=100\text{ A}/\mu\text{s}$	-	53	-	ns

NOTES :

1. Pulse width $\leq 300\text{ }\mu\text{s}$, Duty cycle $\leq 2\%$.
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. $R_{\theta JA}$ 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. E_{AS} is calculated based on the condition by $L=1\text{mH}$, $I_{AS}=9.8\text{A}$, and then $L=0.1\text{ mH}$, $I_{AS}=15\text{ A}$, $V_{DD}=50\text{ V}$, $V_{GS}=10\text{ V}$. 100% test in production.
6. Guaranteed by design, not subject to production testing.

TYPICAL CHARACTERISTIC CURVES

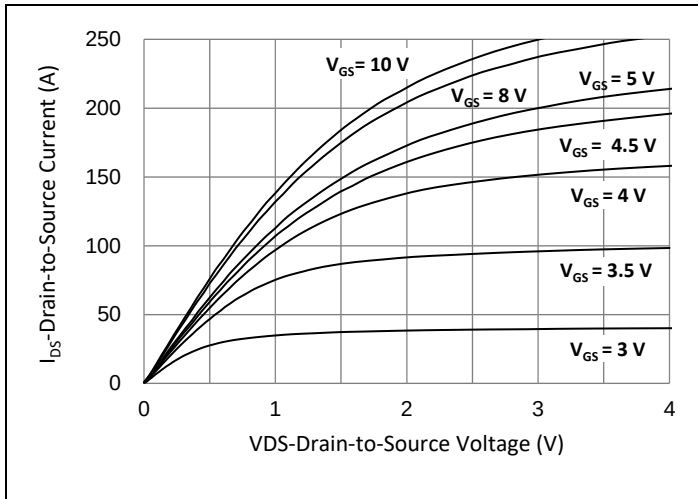


Fig.1 Output Characteristics

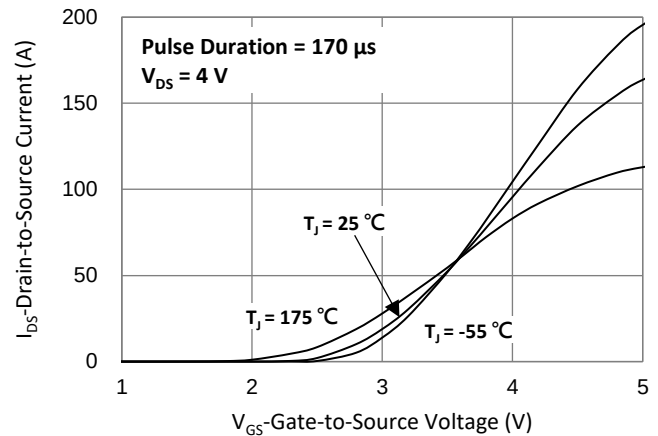


Fig.2 Transfer Characteristics

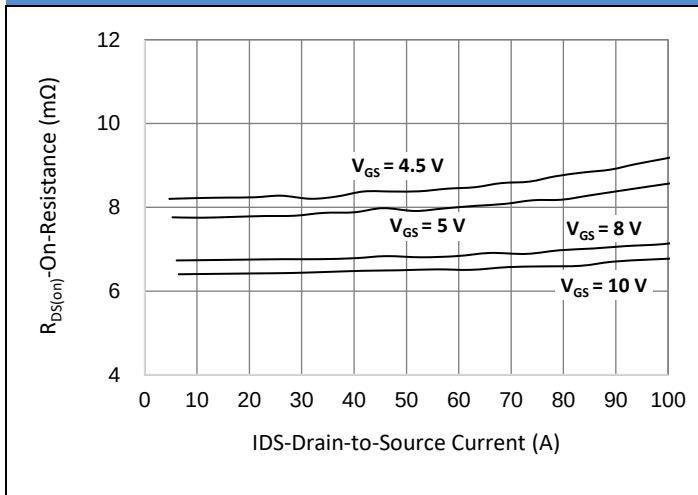


Fig.3 On-Resistance vs. Drain Current

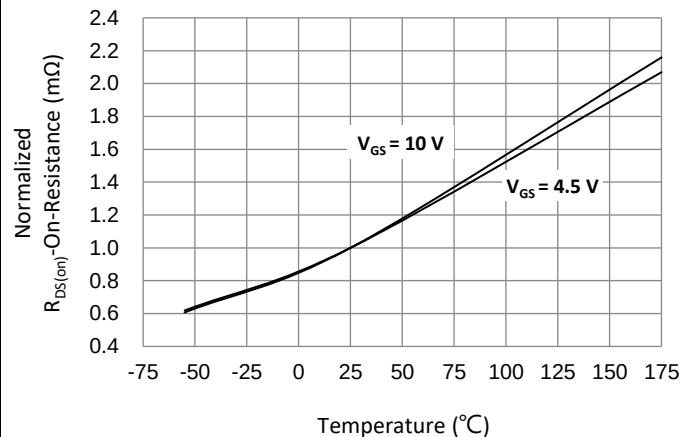


Fig.4 On-Resistance vs. Junction temperature

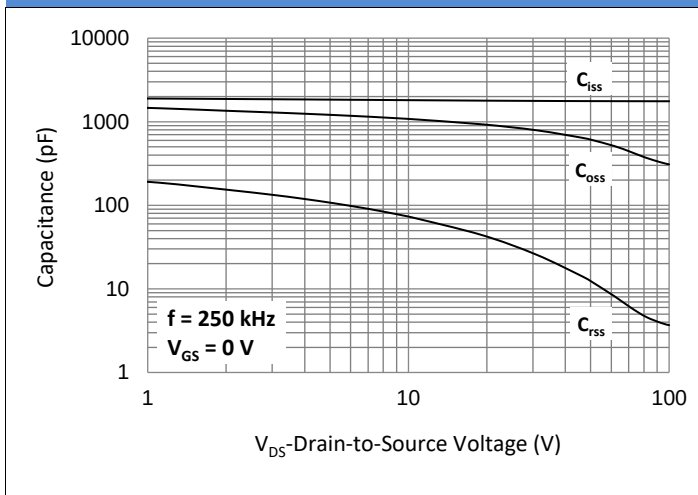


Fig.5 Capacitance vs. Drain-Source Voltage

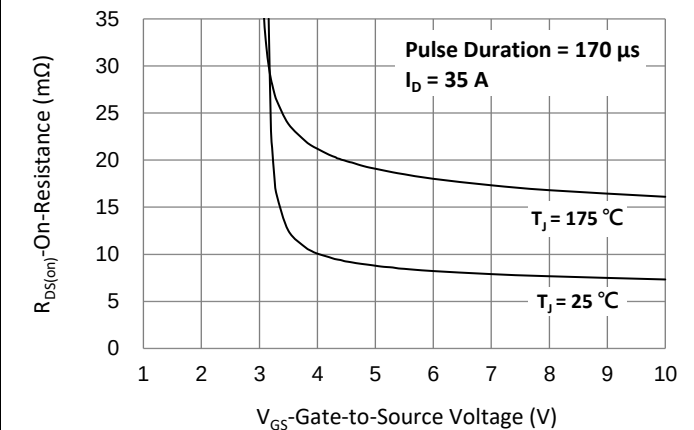


Fig.6 On-Resistance vs. Gate-Source Voltage

TYPICAL CHARACTERISTIC CURVES

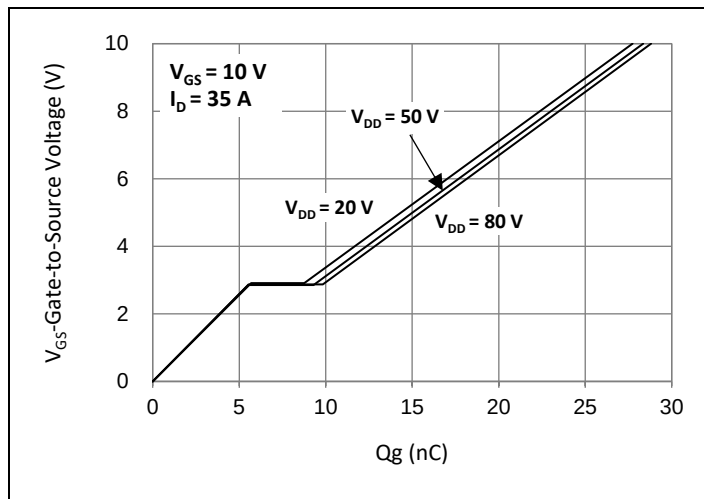


Fig.7 Gate-Charge Characteristics

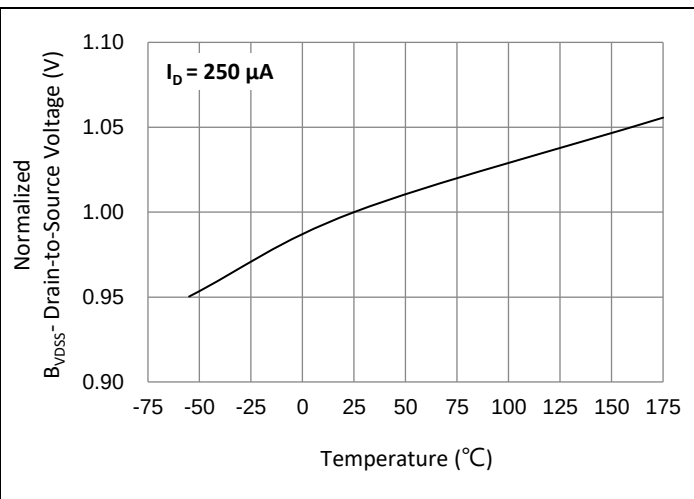


Fig.8 Breakdown Voltage Variation vs. Temperature

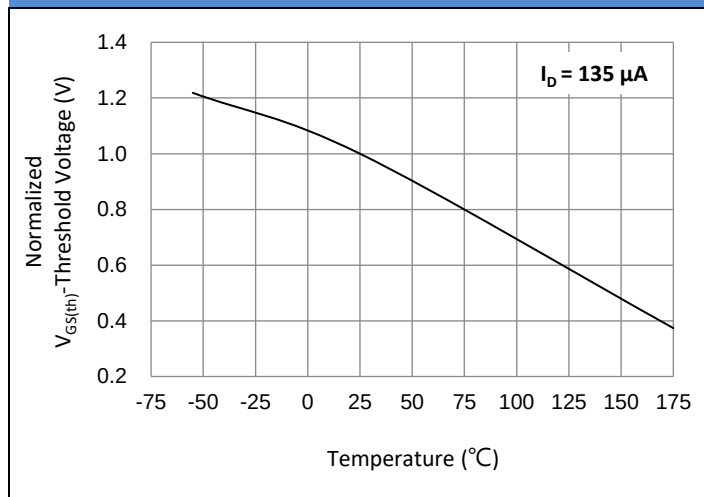


Fig.9 Threshold Voltage Variation with Temperature

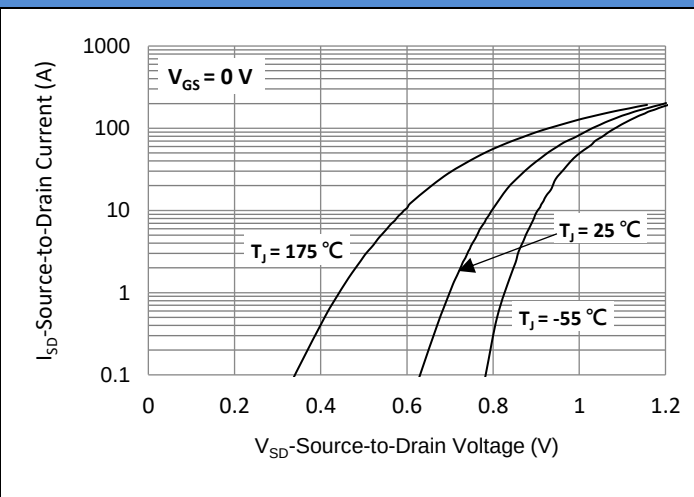


Fig.10 Source-Drain Diode Forward Voltage

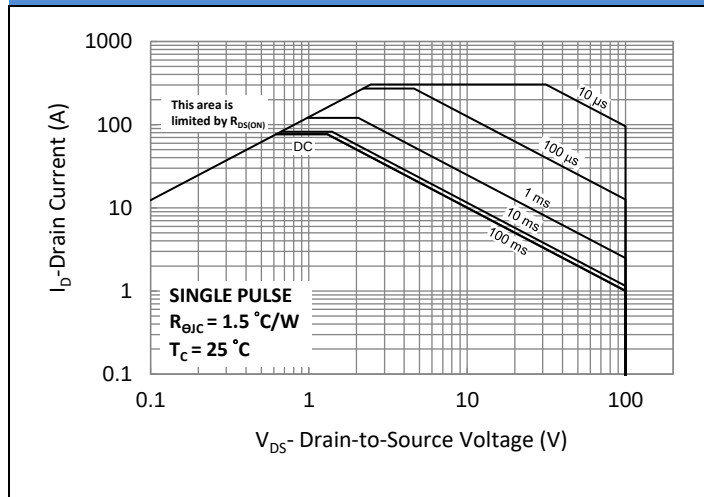


Fig.11 Maximum Safe Operating Area

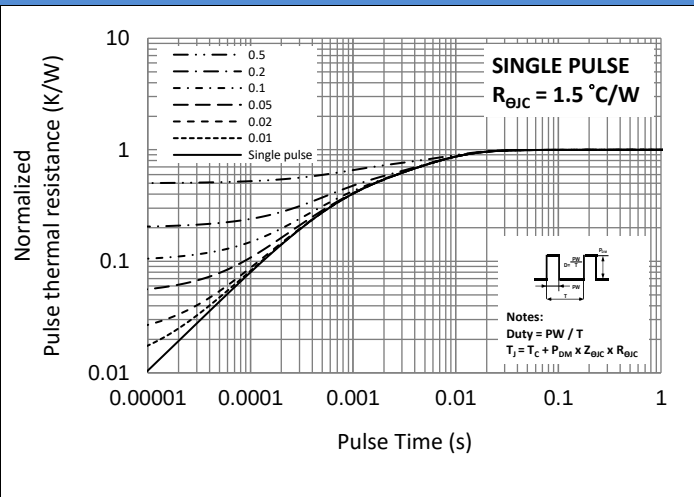
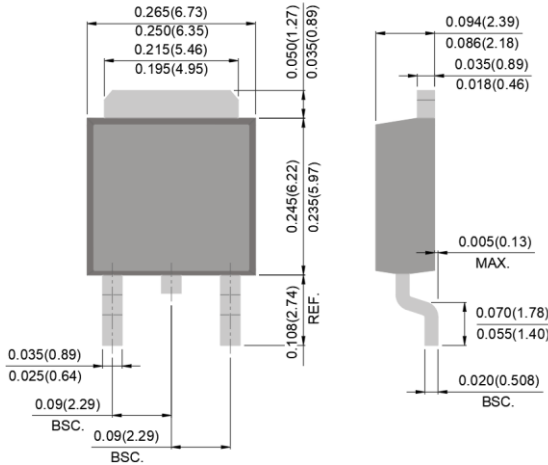
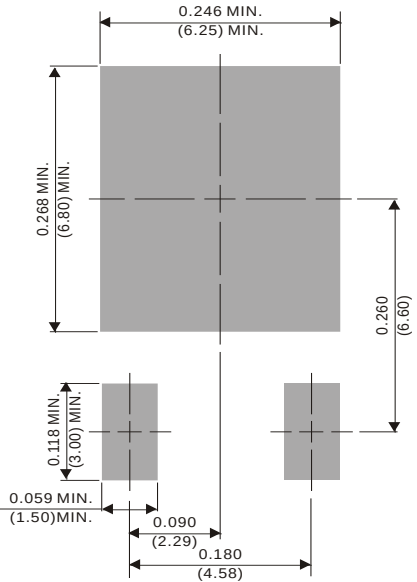


Fig.12 Normalized Transient Thermal Impedance

Product and Packing Information

Part No.	Package Type	Packing Type	Marking
PSMD081N10LS2	TO-252AA	3,000 pcs / 13" reel	081N10LS

Packaging Information & Mounting Pad Layout

TO-252AA Dimension	Unit: inch(mm)	TO-252AA Pad Layout	Unit: inch(mm)
 Diagram showing the mechanical dimensions of the TO-252AA package. Key dimensions include: overall width 0.265(6.73), mounting pad width 0.094(2.39), lead thickness 0.005(0.13) MAX., and lead length 0.108(2.74) REF. BSC. dimensions are provided for the mounting pads and leads.		 Diagram showing the mounting pad layout for the TO-252AA package. Key dimensions include: mounting pad width 0.246 MIN. (6.25) MIN., mounting pad length 0.268 MIN. (6.80) MIN., and lead length 0.118 MIN. (3.00) MIN. BSC. dimensions are provided for the mounting pads and leads.	

Marking Diagram

PJ	Y = Year Code
081N10LS	W = Week Code (A~Z)
YWLL x	LL = Lot Code (00~99)
	x = Production Line Code

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