

NVATS5A112PLZ

Advance Information

Power MOSFET

-60V, 43mΩ, -27A, P-Channel



ON Semiconductor®

www.onsemi.com

Automotive Power MOSFET designed for compact and efficient designs and including high thermal performance. AEC-Q101 qualified MOSFET and PPAP capable suitable for automotive applications.

Features

- Low On-Resistance
- High Current Capability
- 100% Avalanche Tested
- AEC-Q101 qualified and PPAP capable
- Pb-Free, Halogen Free and RoHS compliance

Typical Applications

- Reverse Battery Protection
- Load Switch
- Automotive Front Lighting
- Automotive Body Controllers

SPECIFICATIONS

ABSOLUTE MAXIMUM RATING at Ta = 25°C (Note 1)

Parameter	Symbol	Value	Unit
Drain to Source Voltage	V _{DSS}	-60	V
Gate to Source Voltage	V _{GSS}	±20	V
Drain Current (DC)	I _D	-27	A
Drain Current (Pulse) PW ≤ 10μs, duty cycle ≤ 1%	I _{DP}	-81	A
Power Dissipation Tc=25°C	P _D	48	W
Operating Junction and Storage Temperature	T _J , T _{stg}	-55 to +175	°C
Avalanche Energy (Single Pulse) (Note 2)	E _{AS}	50	mJ
Avalanche Current (Note 3)	I _{AV}	-13	A

Note 1 : Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

2 : V_{DD} = -10V, L = 500μH, I_{AV} = -13A

3 : L ≤ 500μH, Single pulse

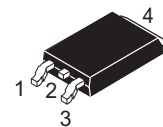
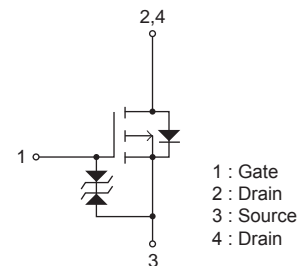
THERMAL RESISTANCE RATINGS

Parameter	Symbol	Value	Unit
Junction to Case Steady State (Tc=25°C)	R _{θJC}	3.1	°C/W
Junction to Ambient (Note 4)	R _{θJA}	80.5	°C/W

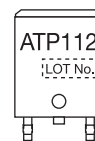
Note 4 : Surface mounted on FR4 board using a 130mm², 1 oz. Cu pad.

V _{DSS}	R _{DS(on)} Max	I _D Max
-60V	43mΩ@ -10V	-27A
	59mΩ@ -4.5V	
	63mΩ@ -4V	

ELECTRICAL CONNECTION P-Channel



MARKING



ORDERING INFORMATION

See detailed ordering and shipping information on page 6 of this data sheet.

This document contains information on a new product. Specifications and information herein are subject to change without notice.

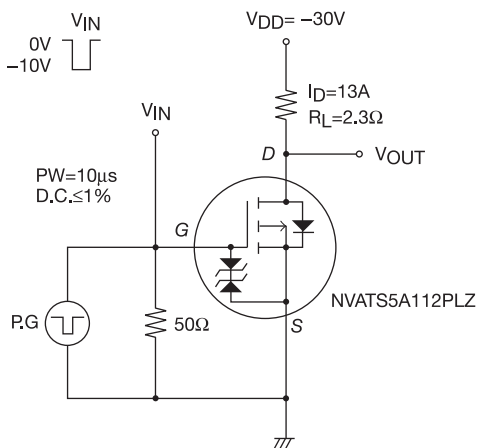
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ELECTRICAL CHARACTERISTICS at Ta = 25°C (Note 5)

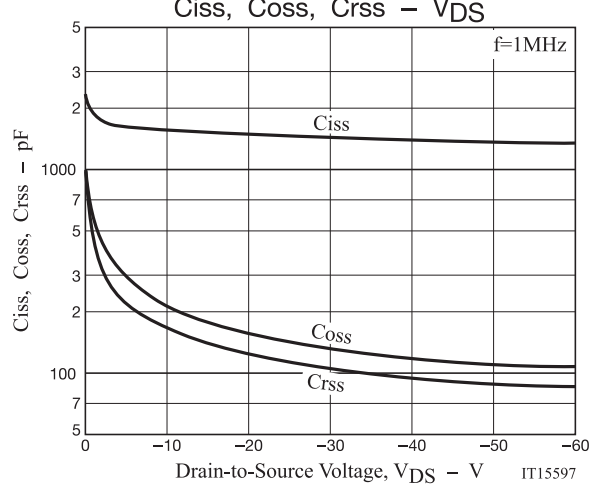
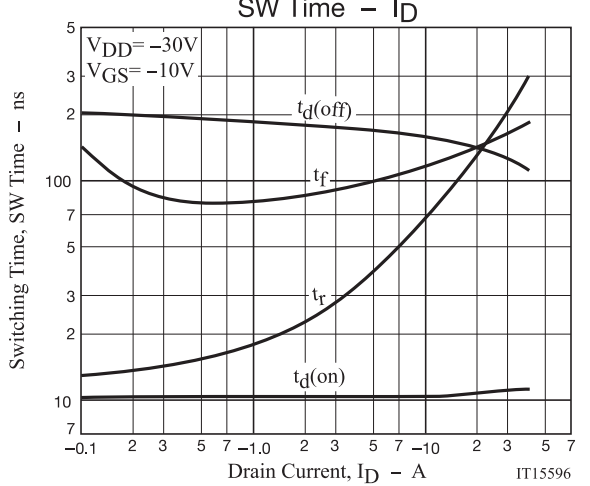
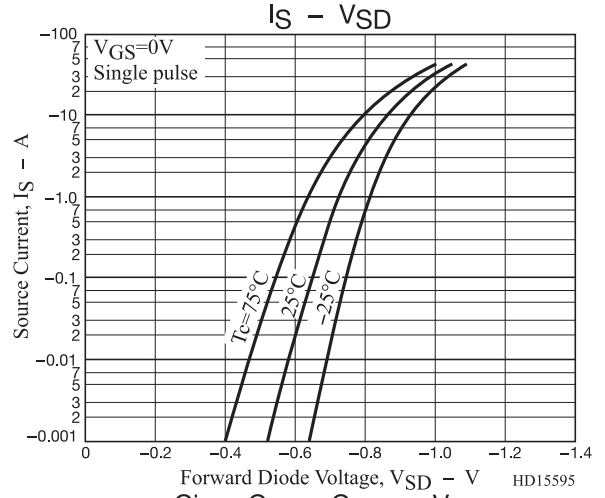
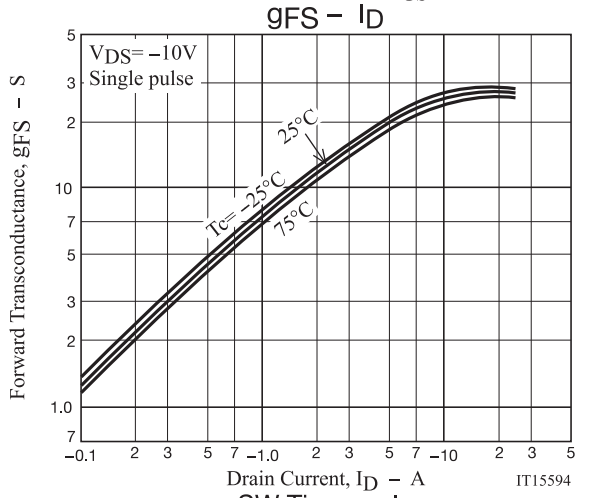
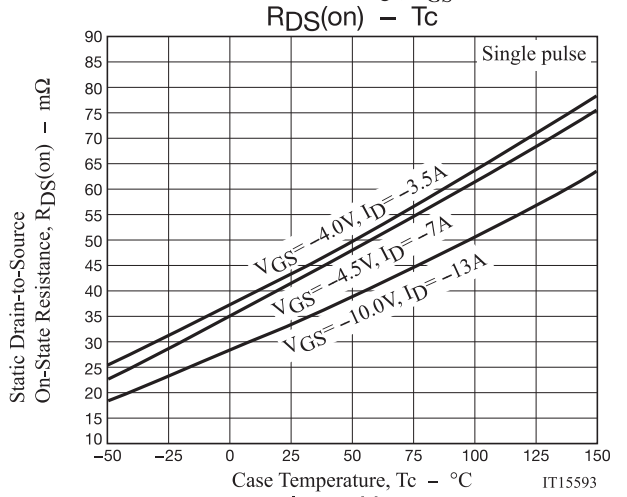
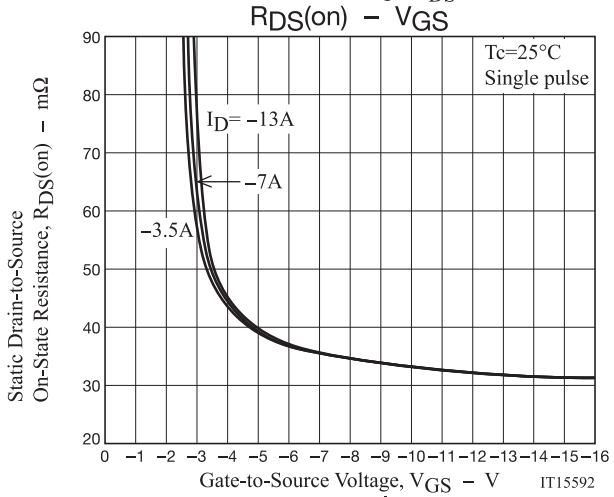
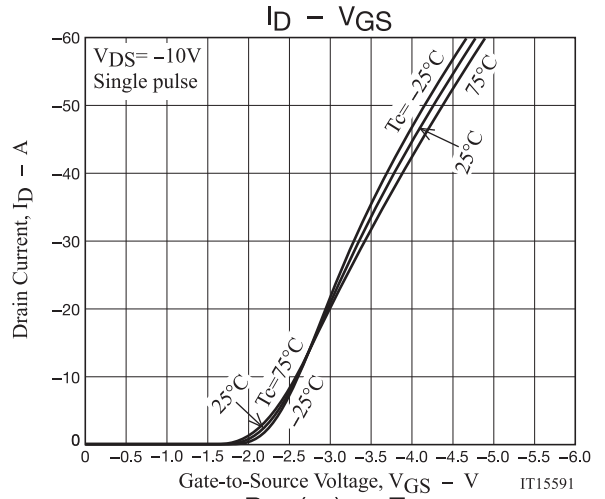
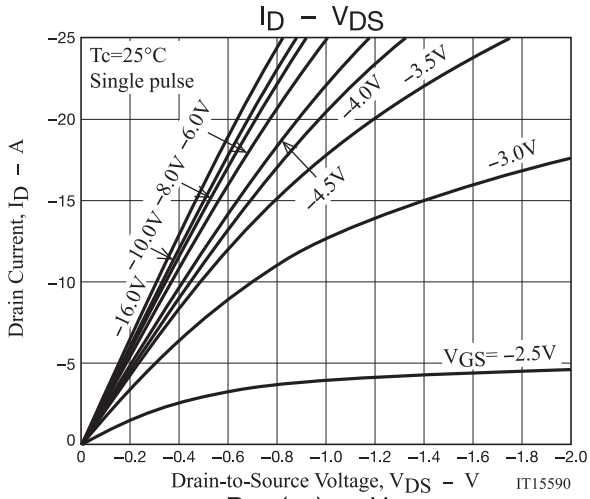
Parameter	Symbol	Conditions	Value			Unit
			min	typ	max	
Drain to Source Breakdown Voltage	V(BR)DSS	I _D =-1mA, V _{GS} =0V	-60			V
Zero-Gate Voltage Drain Current	I _{DSS}	V _{DS} =-60V, V _{GS} =0V			-1	μA
Gate to Source Leakage Current	I _{GSS}	V _{GS} =±16V, V _{DS} =0V			±10	μA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =-10V, I _D =-1mA	-1.2		-2.6	V
Forward Transconductance	g _{FS}	V _{DS} =-10V, I _D =-13A		24		S
Static Drain to Source On-State Resistance	R _{DS(on)}	I _D =-13A, V _{GS} =-10V		33	43	mΩ
		I _D =-7A, V _{GS} =-4.5V		42	59	mΩ
		I _D =-3.5A, V _{GS} =-4V		45	63	mΩ
Input Capacitance	C _{iss}	V _{DS} =-20V, f=1MHz		1,450		pF
Output Capacitance	C _{oss}			155		pF
Reverse Transfer Capacitance	C _{rss}			125		pF
Turn-ON Delay Time	t _{d(on)}		See Fig.1		10	
Rise Time	t _r			80		ns
Turn-OFF Delay Time	t _{d(off)}			150		ns
Fall Time	t _f			120		ns
Total Gate Charge	Q _g	V _{DS} =-30V, V _{GS} =-10V, I _D =-25A		33.5		nC
Gate to Source Charge	Q _{gs}			5.3		nC
Gate to Drain "Miller" Charge	Q _{gd}			7.9		nC
Forward Diode Voltage	V _{SD}		I _S =-25A, V _{GS} =0V		-0.97	-1.5

Note 5 : Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

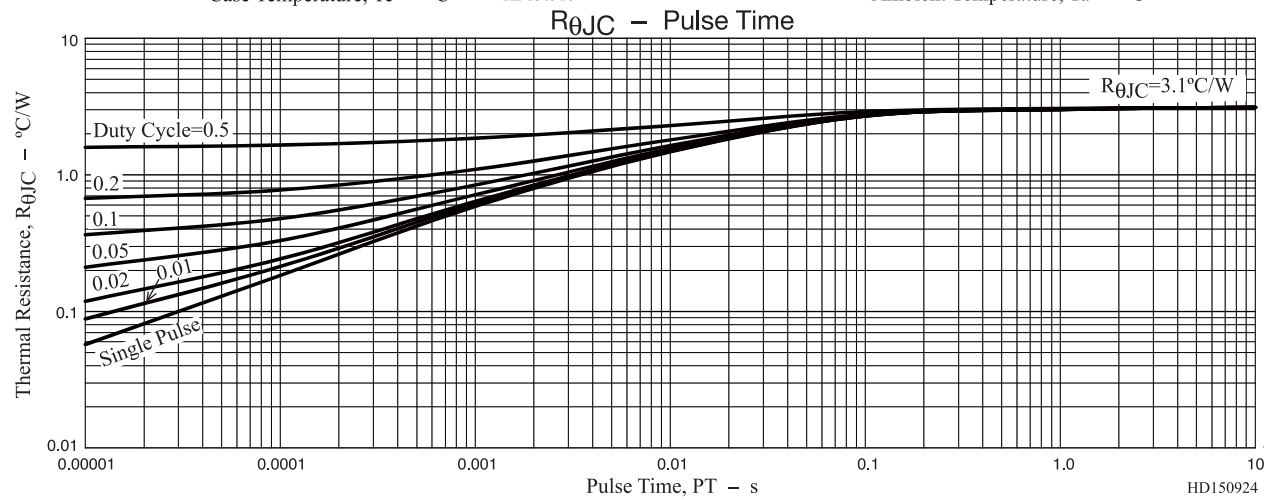
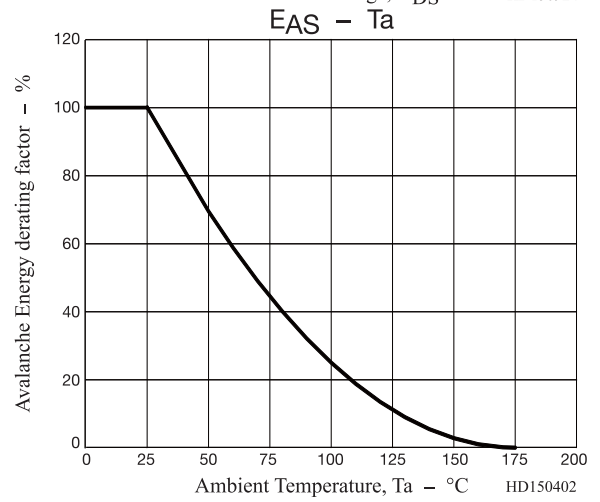
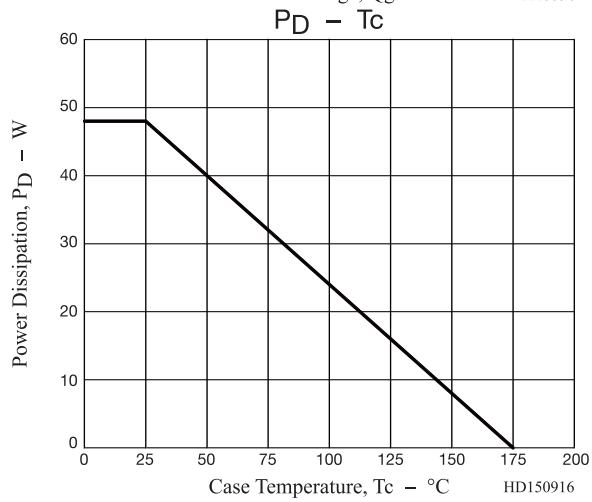
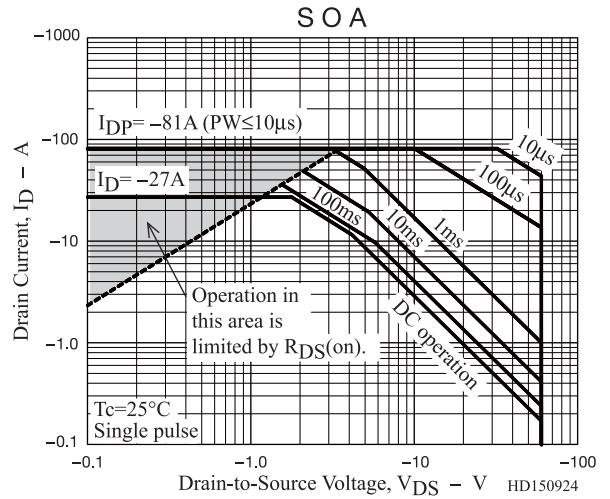
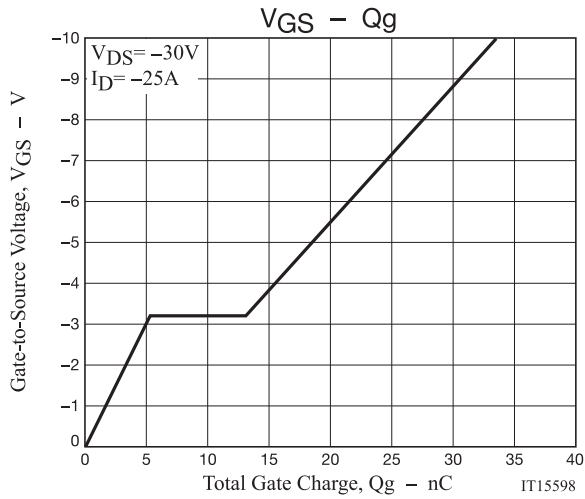
Fig.1 Switching Time Test Circuit



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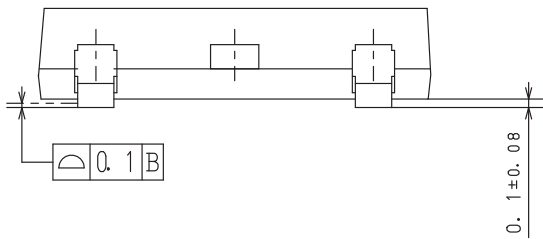
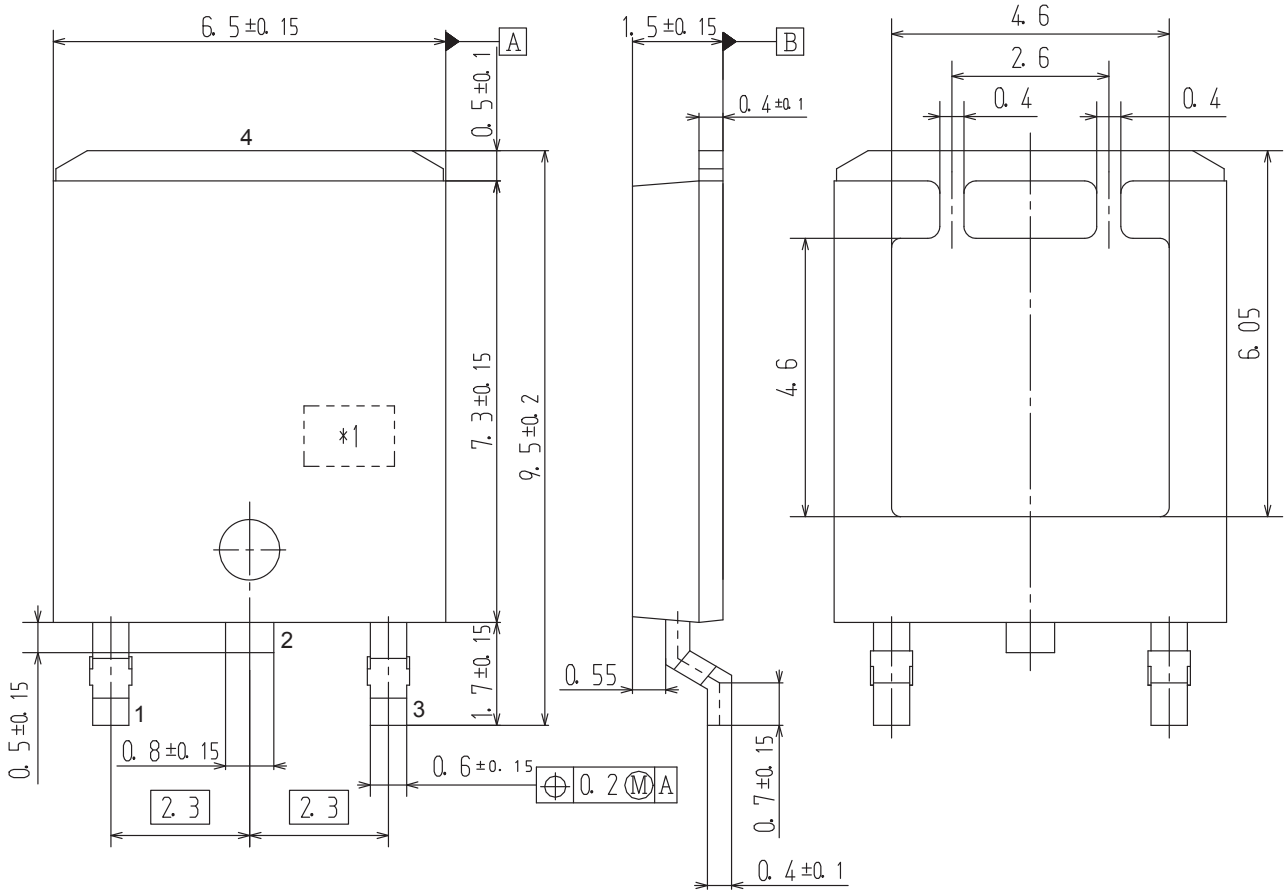
PACKAGE DIMENSIONS

unit : mm

DPAK (Single Gauge) / ATPAK

CASE 369AM

ISSUE O

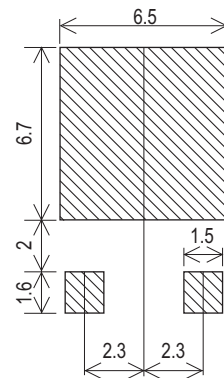


Pin2 is idle pin with electrical designation only carried

*1: Lot indication

- 1 : Gate
- 2 : Drain
- 3 : Source
- 4 : Drain

RECOMMENDED SOLDERING FOOTPRINT



NVATS5A112PLZ

ORDERING INFORMATION

Device	Marking	Package	Shipping (Qty / Packing)
NVATS5A112PLZT4G	ATP112	DPAK(Single Gauge) / ATPAK (Pb-Free / Halogen Free)	3,000 / Tape & Reel

† For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D. http://www.onsemi.com/pub_link/Collateral/BRD8011-D.PDF

Note on usage : Since the NVATS5A112PLZ is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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