

NVC6S5A354PLZ

Power MOSFET

–60V, 100mΩ, –4A, P-Channel



ON Semiconductor®

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This Power MOSFET is produced using ON Semiconductor's trench technology, which is specifically designed to minimize gate charge and low on resistance. This device is suitable for applications with low gate charge driving or low on resistance requirements.

Features

- 4V drive
- High ESD protection
- Low On-Resistance
- Pb-Free, Halogen Free and RoHS compliance

Typical Applications

- Reverse Battery Protection
- High Side Load Switch

SPECIFICATIONS

ABSOLUTE MAXIMUM RATING at $T_a = 25^{\circ}\text{C}$ (Note 1)

Parameter	Symbol	Value	Unit
Drain to Source Voltage	V_{DS}	–60	V
Gate to Source Voltage	V_{GS}	± 20	V
Drain Current (DC) (Note 2)	I_D	–4	A
Drain Current (DC) (Note 3)		–3	A
Drain Current (Pulse) $PW \leq 10\mu\text{s}$, duty cycle $\leq 1\%$	I_{DP}	–16	A
Power Dissipation $T_a = 25^{\circ}\text{C}$ (Note 2)	P_D	1.9	W
Power Dissipation $T_a = 25^{\circ}\text{C}$ (Note 3)		0.9	W
Junction Temperature and Storage Temperature	T_j, T_{stg}	–55 to +175	$^{\circ}\text{C}$

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.

THERMAL RESISTANCE RATINGS

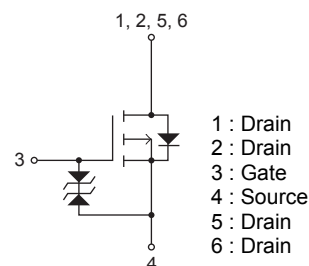
Parameter	Symbol	Value	Unit
Junction to Ambient	$R_{\theta JA}$	78.1	$^{\circ}\text{C/W}$
		160	$^{\circ}\text{C/W}$

Note 2 : Surface mounted on ceramic substrate(1500mm² × 0.8mm).

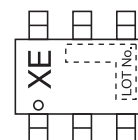
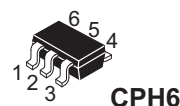
Note 3 : Surface mounted on FR4 board using a 92mm², 1 oz. Cu pad.

V_{DS}	$R_{DS(on)}$ Max	I_D Max
–60V	100mΩ@ –10V	–4A
	135mΩ@ –4.5V	
	145mΩ@ –4.0V	

ELECTRICAL CONNECTION P-Channel



MARKING



ORDERING INFORMATION

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

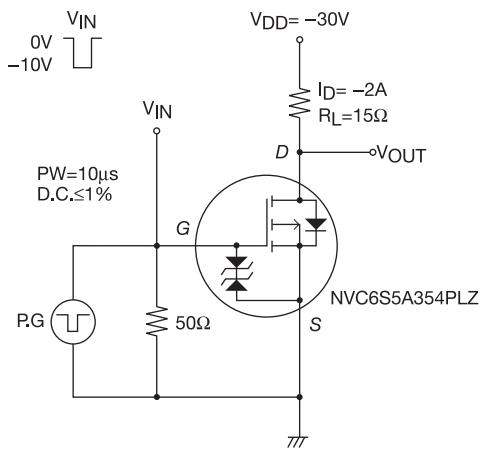
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ELECTRICAL CHARACTERISTICS at Ta = 25°C (Note 4)

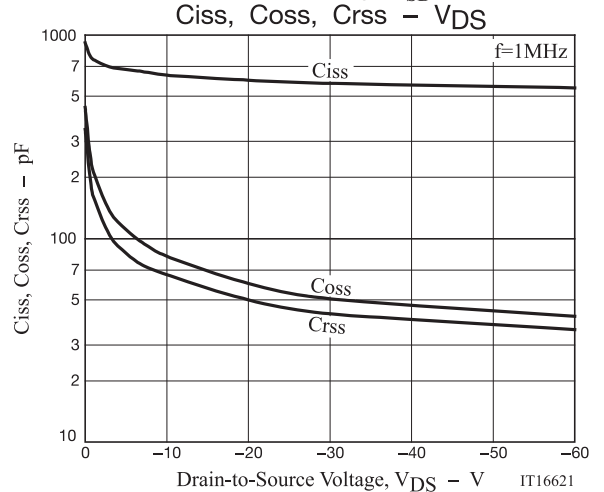
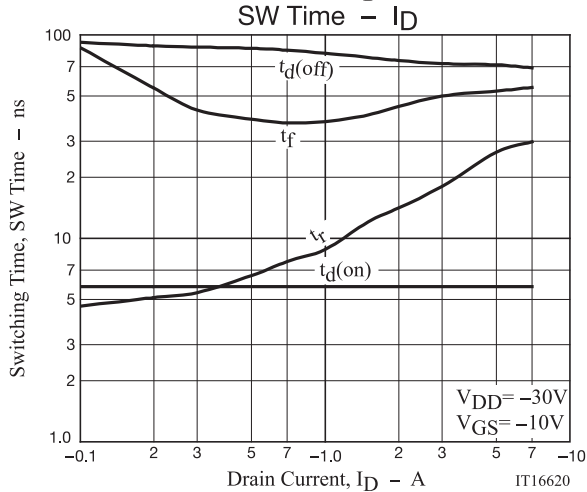
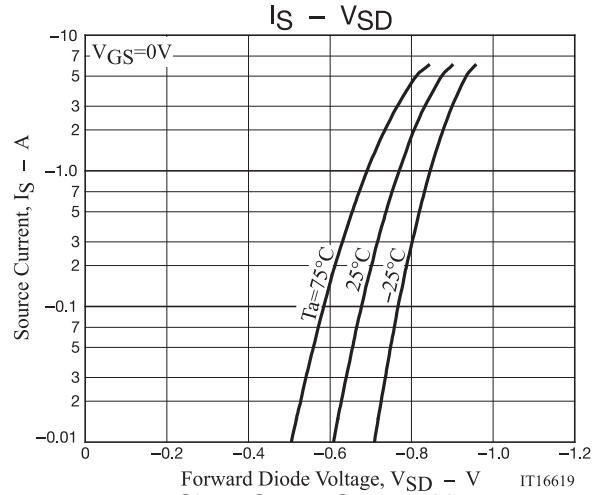
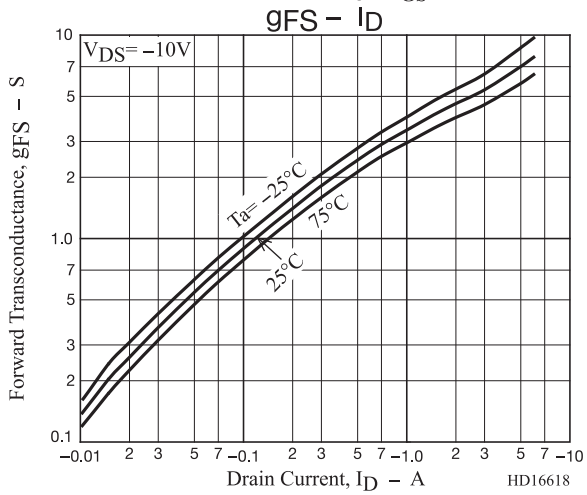
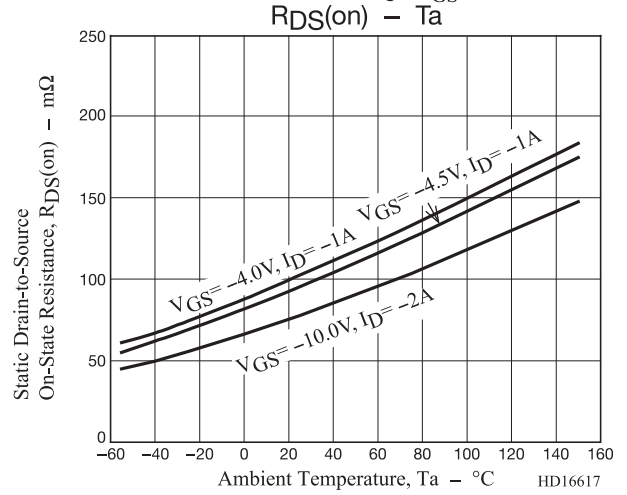
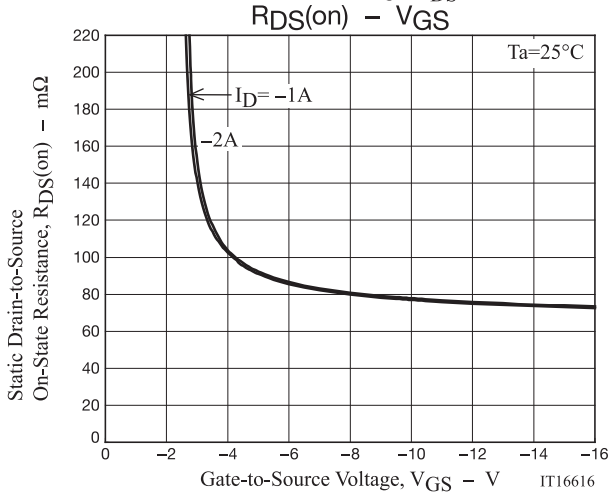
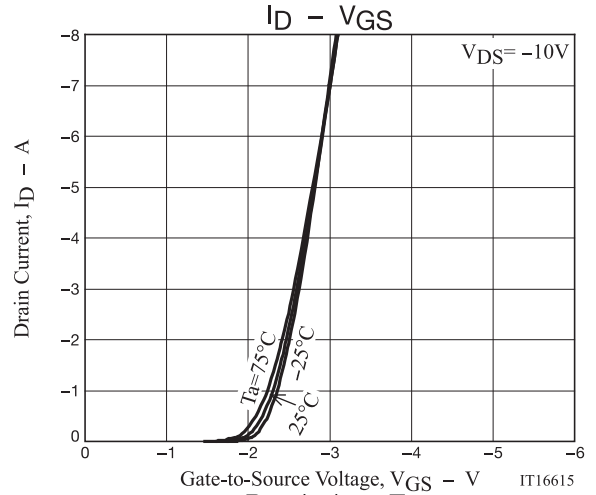
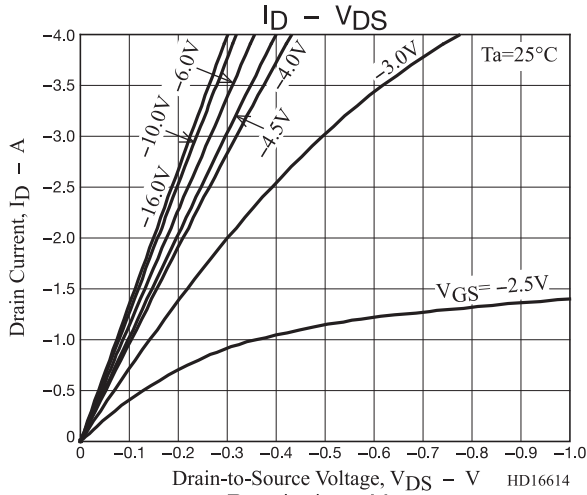
Parameter	Symbol	Conditions	Value			Unit
			min	typ	max	
Drain to Source Breakdown Voltage	V(BR)DSS	ID=−1mA, VGS=0V	−60			V
Zero-Gate Voltage Drain Current	IDSS	VDS=−60V, VGS=0V			−1	μA
Gate to Source Leakage Current	IGSS	VGS=±16V, VDS=0V			±10	μA
Gate Threshold Voltage	VGS(th)	VDS=−10V, ID=−1mA	−1.2		−2.6	V
Forward Transconductance	gFS	VDS=−10V, ID=−2A		4.8		S
Static Drain to Source On-State Resistance	RDS(on)	ID=−2A, VGS=−10V		77	100	mΩ
		ID=−1A, VGS=−4.5V		96	135	mΩ
		ID=−1A, VGS=−4V		103	145	mΩ
Input Capacitance	Ciss	VDS=−20V, f=1MHz		600		pF
Output Capacitance	Coss			60		pF
Reverse Transfer Capacitance	Crss			50		pF
Turn-ON Delay Time	td(on)	See Fig. 1		5.8		ns
Rise Time	tr			12		ns
Turn-OFF Delay Time	td(off)			78		ns
Fall Time	tf			40		ns
Total Gate Charge	Qg	VDS=−30V, VGS=−10V, ID=−4A		14		nC
Gate to Source Charge	Qgs			1.6		nC
Gate to Drain "Miller" Charge	Qgd			3.4		nC
Forward Diode Voltage	VSD	IS=−4A, VGS=0V		−0.84	−1.2	V

Note 4 : 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.

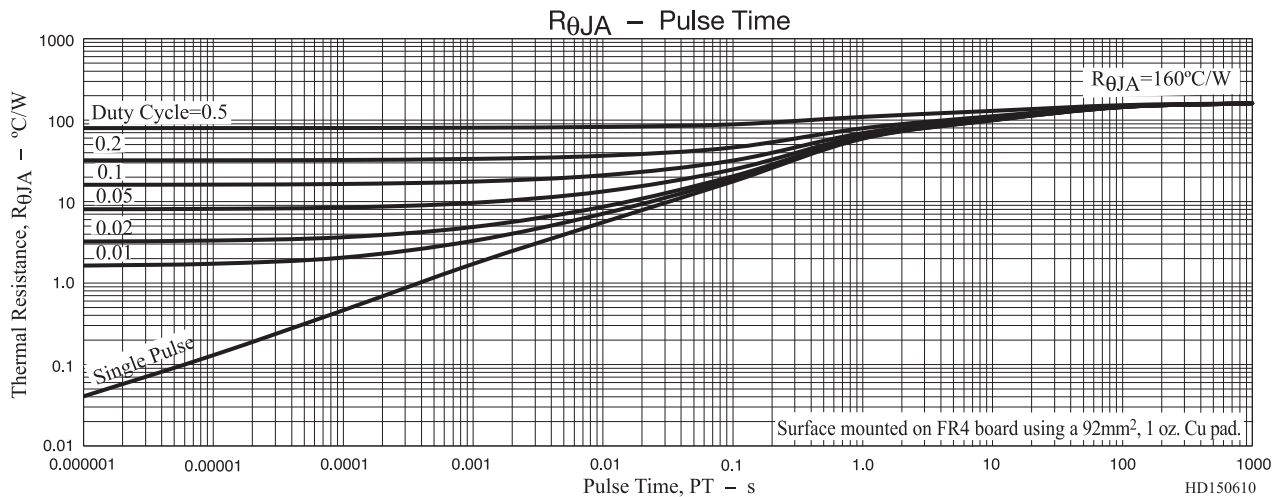
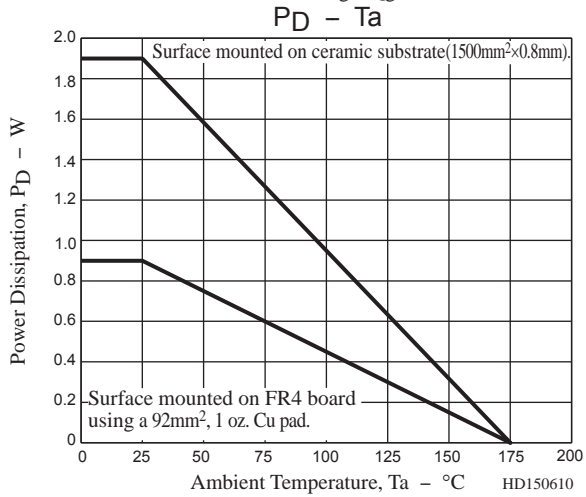
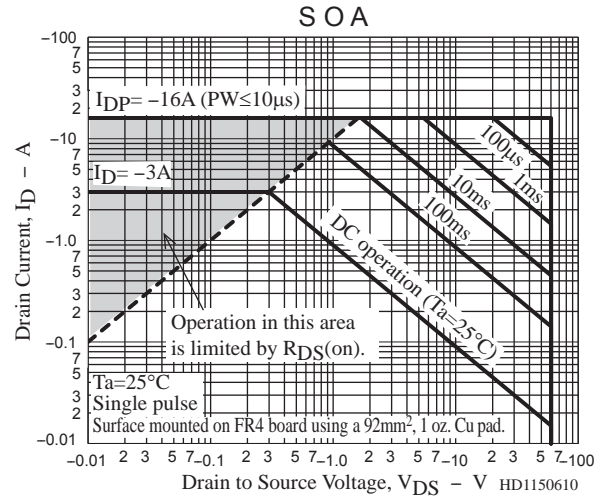
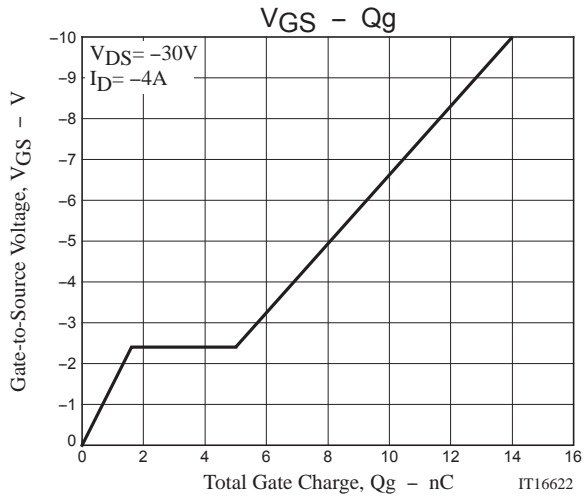
Fig.1 Switching Time Test Circuit



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NVC6S5A354PLZ



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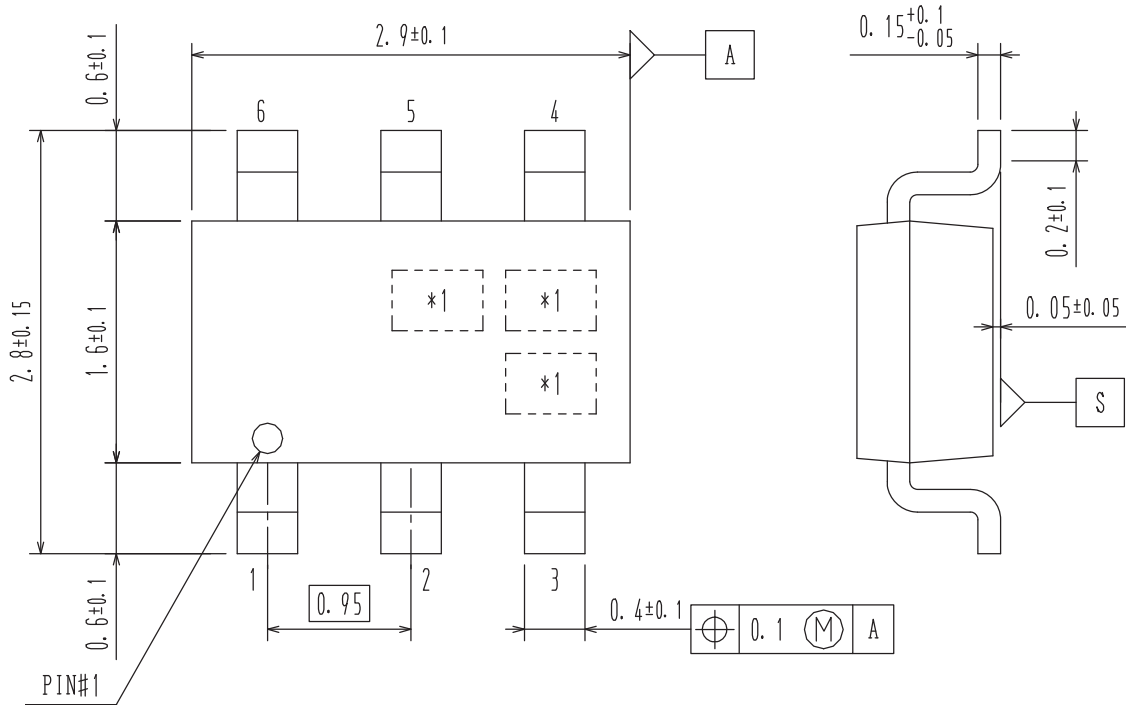
PACKAGE DIMENSIONS

unit : mm

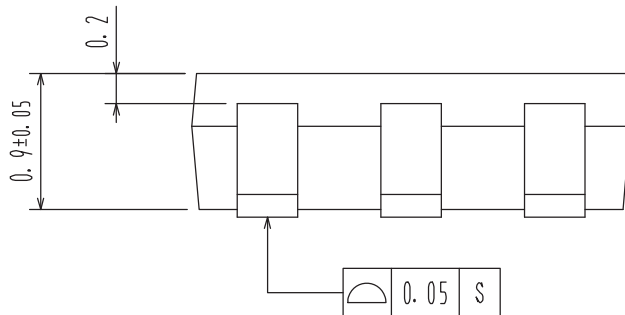
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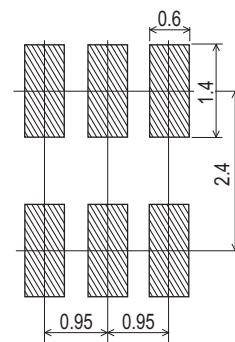
ISSUE O



*1: Lot indication



Recommended Soldering Footprint



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

NVC6S5A354PLZ

ORDERING INFORMATION

Device	Marking	Package	Shipping (Qty / Packing)
NVC6S5A354PLZT1G	XE	CPH6 (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 NVC6S5A354PLZ is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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