1. Features

GaNFast™ Power FET

- eMode GaN power FET
- Low 2.5 mΩ (max) resistance
- Ultra-low gate charge
- Zero reverse recovery charge
- Low output charge
- 96 V Transient Voltage Rating
- 80 V Continuous Voltage Rating
- Small, low-profile SMT PQFN-TC
- 3x5 mm PCB footprint
- Minimized package inductance
- Low thermal resistance
- Top-side cooled

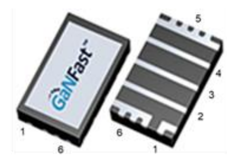
Environmental

- RoHS, Pb-free, REACH-compliant

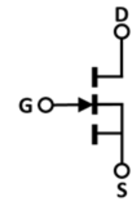
2. Topologies / Applications

- Telecom & Datacenter
- Sync Rectification for AC-DC and DC-DC converters
- Battery powered tools
- e-Mobility, UAVs
- Class D Audio
- Solar & Energy storage systems

GaNFast™ FETs



PQFN-TC 3x5 mm



Top side is an exposed silicon substrate internally connected to the source terminal. Not recommended for use as an electrical connection.

3. Description

This GaNFast™ power FET is a high performance eMode GaN FET that achieves excellent high-frequency and high efficiency operation.

This GaN power FET combines the highest dV/dt immunity and industry-standard low-profile, low-inductance, top-side cooled SMT PQFN-TC packaging to enable designers to achieve simple, quick and reliable solutions.

Navitas' GaN technology extends the capabilities of traditional topologies such as half-bridge, buck/boost, LLC and other resonant converters to reach MHz+ frequencies with very high efficiencies and low EMI to achieve unprecedented power densities at a very attractive cost structure.

4. Table of Contents

5. Specifications

5.1. Absolute Maximum Ratings(1)

(with respect to Source unless noted)

SYMBOL	PARAMETER	MAX	UNITS
$V_{DS(TRAN)}$	Transient Drain-to-Source Voltage(2)	96	V
$V_{DS(CONT)}$	Continuous Drain-to-Source Voltage	80	V
V_{GS}	Continuous Gate-to-Source Voltage	-4 to +6	V
V_{TGS}	Transient Gate-to-Source Voltage(2)	-6.5 to +6.5	V
I_{DS}	Continuous Drain Current (@ T_C = 25 °C)	86	A
I_{DS}	Continuous Drain Current (@ T_A = 25 °C), $R_{\theta JA}$ = 38 °C/W	23	A
I_{DS} PULSE	Pulsed Drain Current (@ T_J = 25 °C) (3)	550	A
I_{DS} PULSE	Pulsed Drain Current (@ T_J = 150 °C) (3)	290	A
T_J	Operating Junction Temperature	-40 to 150	°C
T_{STOR}	Storage Temperature	-55 to 150	°C

(1) Absolute maximum ratings are stress ratings; devices subjected to stresses beyond these ratings may cause permanent damage.
(2) Provided as measure of robustness under abnormal operating conditions and not recommended for normal operation.
(3) Pulse current limited by transfer characteristic.

5.2. Recommended Operating Conditions

SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	CONDITIONS
V_{GS}	Gate-To-Source Voltage		5		V	

5.3. Thermal Resistance

SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case, Top	-	0.5	-	°C/W
	Thermal Resistance, Junction-to-Case, Bottom		1.9	-	
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient, ambient 1s0p(4)	-	60	-	°C/W
	Thermal Resistance, Junction-to-Ambient, ambient 2s2p(5)		38		

(4) In accordance with JESD51-9
(5) In accordance with JESD51-7

5.4. Electrical Characteristics

Typical conditions: $T_J = 25$ °C

SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	CONDITIONS
GaN FET Characteristics						
I_{DSS}	Drain-Source Leakage Current		0.2		µA	$V_{DS} = 80$ V, $V_{GS} = 0$ V
I_{DSS}	Drain-Source Leakage Current		7		µA	$V_{DS} = 80$ V, $V_{GS} = 0$ V, $T_J = 125$ °C
I_{GSS}	Gate-Source Leakage Current		19		µA	$V_{GS} = 5$ V
I_{GSS}	Gate-Source Leakage Current		140		µA	$V_{GS} = 5$ V, $T_J = 125$ °C
$R_{DS(ON)}$	Drain-Source Resistance		1.8	2.5	mΩ	$V_{GS} = 5$ V, $I_D = 25$ A
$V_{GS(th)}$	Gate Threshold Voltage	1.2	2	2.9	V	$I_D = 10$ mA, $V_{DS} = V_{GS}$
V_{SD}	Source-Drain Reverse Voltage		2.6		V	$V_{GS} = 0$ V, $I_{SD} = 25$ A
Q_{RR}	Reverse Recovery Charge		0		nC	
R_G	Internal Gate Resistance		0.5		Ω	
C_{ISS}	Input Capacitance		1250		pF	$V_{DS} = 40$ V, $V_{GS} = 0$ V
C_{OSS}	Output Capacitance		570		pF	$V_{DS} = 40$ V, $V_{GS} = 0$ V
C_{RSS}	Reverse Transfer Capacitance		10		pF	$V_{DS} = 40$ V, $V_{GS} = 0$ V
Q_G	Total Gate Charge		12		nC	$V_{GS} = 0\text{-}5$ V, $I_D = 25$ A, $V_{DS} = 40$ V
Q_{GD}	Gate-to-Drain Charge		3.1		nC	$V_{GS} = 0\text{-}5$ V, $I_D = 25$ A, $V_{DS} = 40$ V
Q_{GS}	Gate-to-Source Charge		3.6		nC	$V_{GS} = 0\text{-}5$ V, $I_D = 25$ A, $V_{DS} = 40$ V
Q_{OSS}	Output Charge		40		nC	$V_{GS} = 0$ V, $V_{DS} = 40$ V

5.5. Characteristic Graphs

(GaN FET, T_C = 25 °C unless otherwise specified)

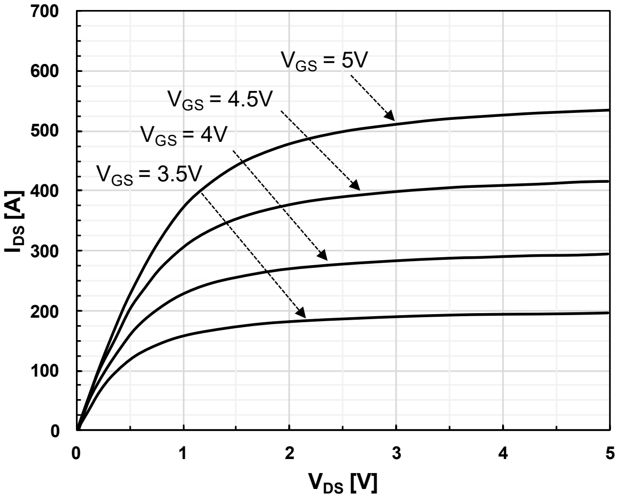


Fig. 1 I_{DS} vs V_{DS}, T_{JUNC} = 25 °C

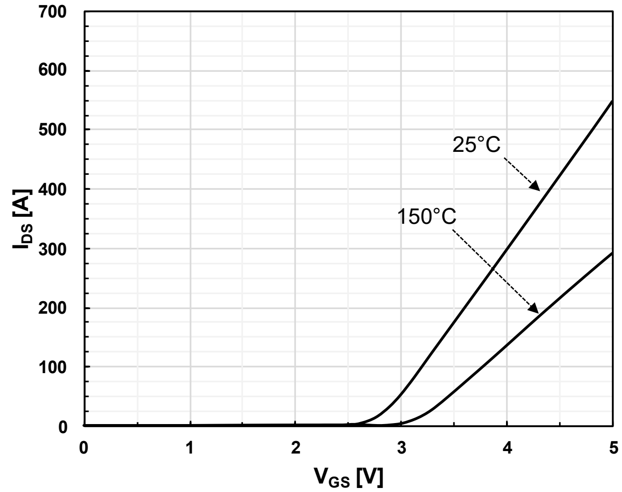


Fig. 2 I_{DS} vs V_{GS}

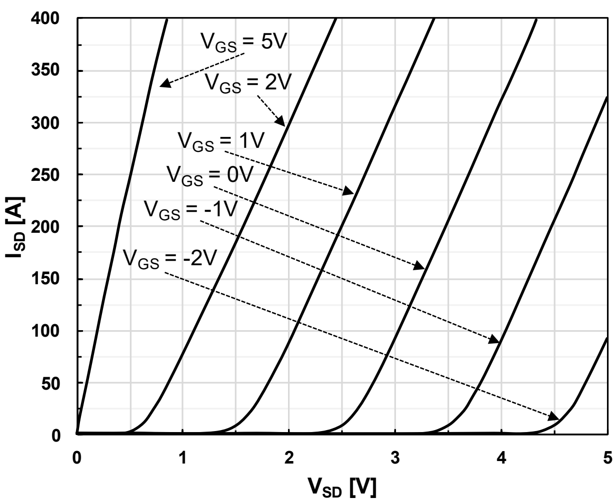


Fig. 3 I_{SD} vs V_{SD}, T_{JUNC} = 25 °C

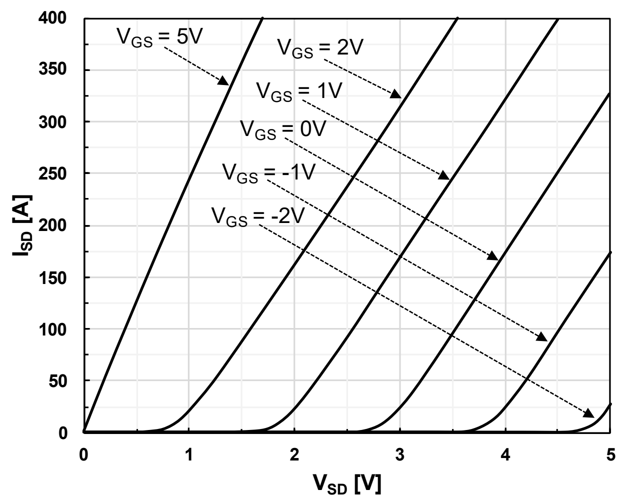


Fig. 4 I_{SD} vs V_{SD}, T_{JUNC} = 125 °C

Characteristic Graphs (Cont.)

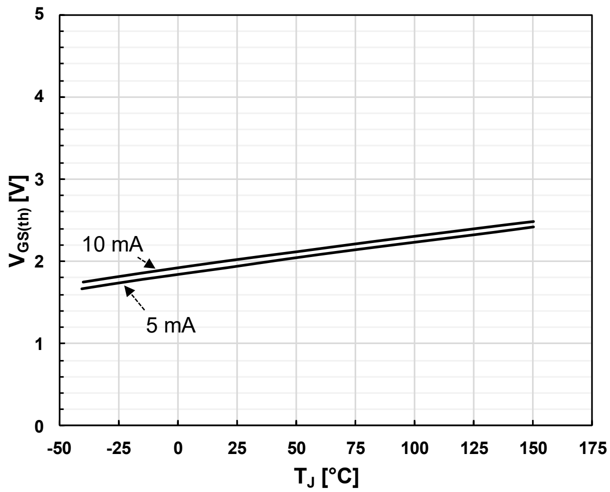


Fig. 5 $V_{GS(th)}$ vs T_{JUNC}

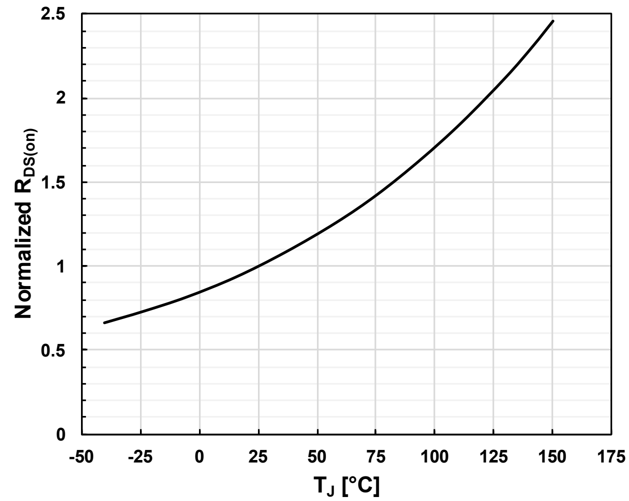


Fig. 6 Normalized $R_{DS(on)}$ vs T_{JUNC}

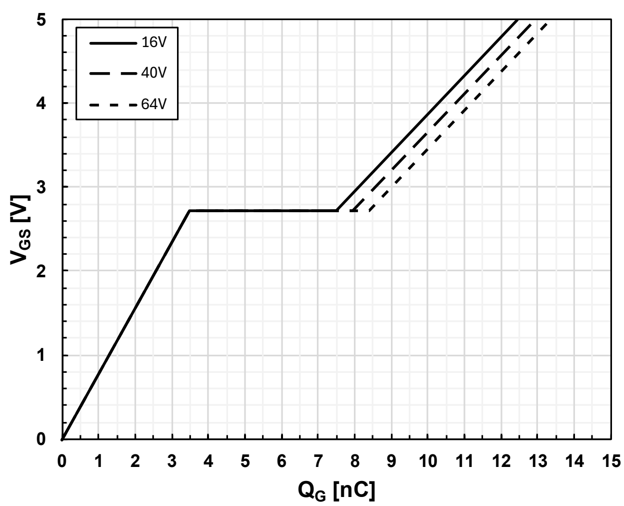


Fig. 7 V_{GS} vs Q_G

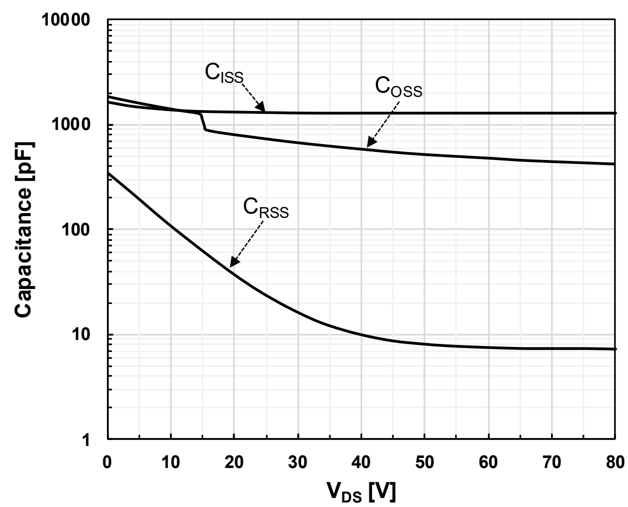


Fig. 8 C_{ISS}, C_{OSS}, C_{RSS} vs V_{DS}

Characteristic Graphs (Cont.)

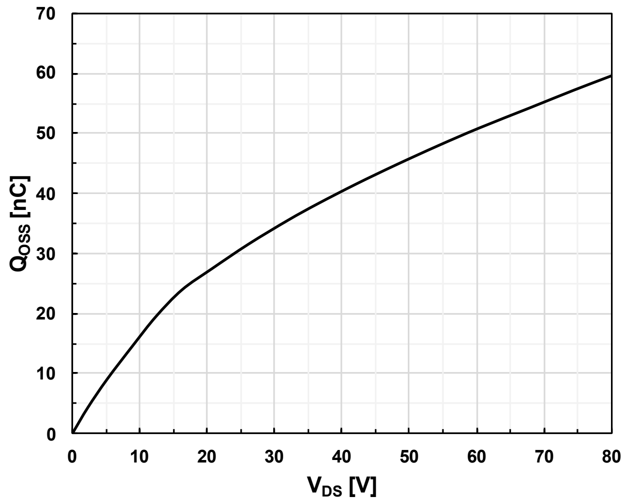


Fig. 9 Q_{OSS} vs V_{DS}

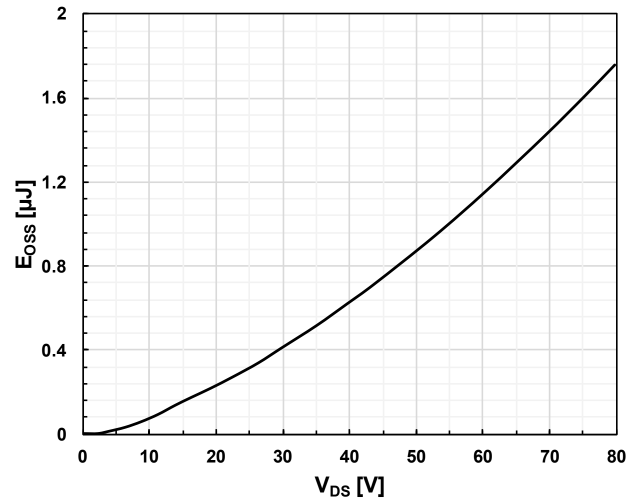


Fig. 10 E_{OSS} vs V_{DS}

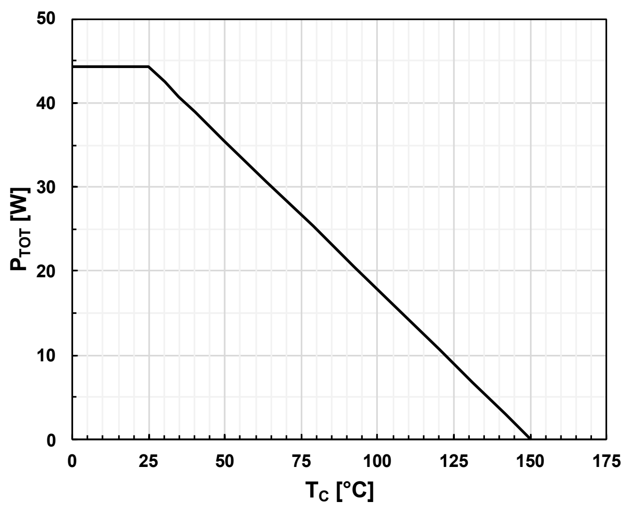


Fig. 11 $P_{DISSAPATION}$ vs T_{CASE}

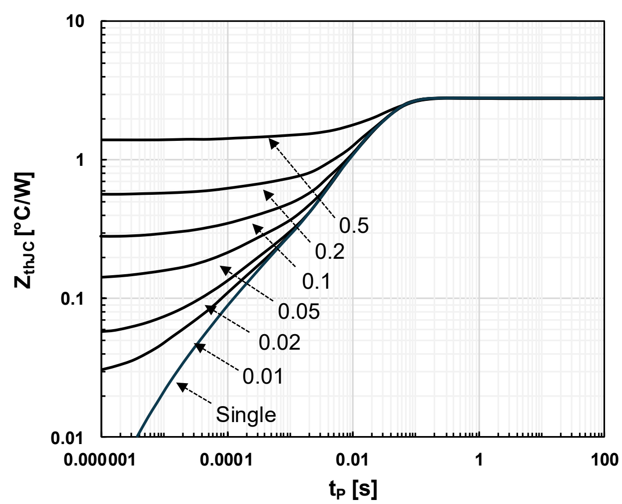


Fig. 12 Max Transient $R_{\Theta JUNC\text{-}CASE}$

Characteristic Graphs (Cont.)

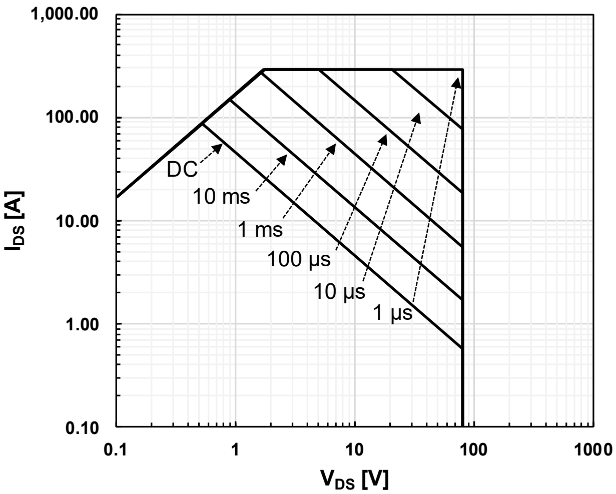
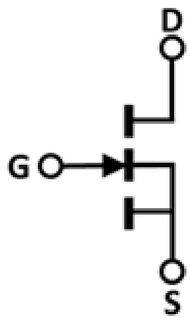
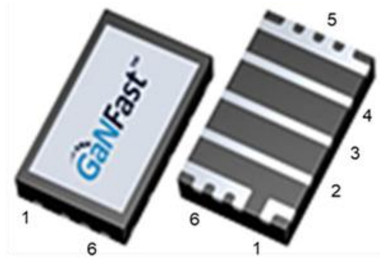


Fig. 13 Safe Operating Area, T_{CASE} = 25 °C

6. Pin Configurations and Functions

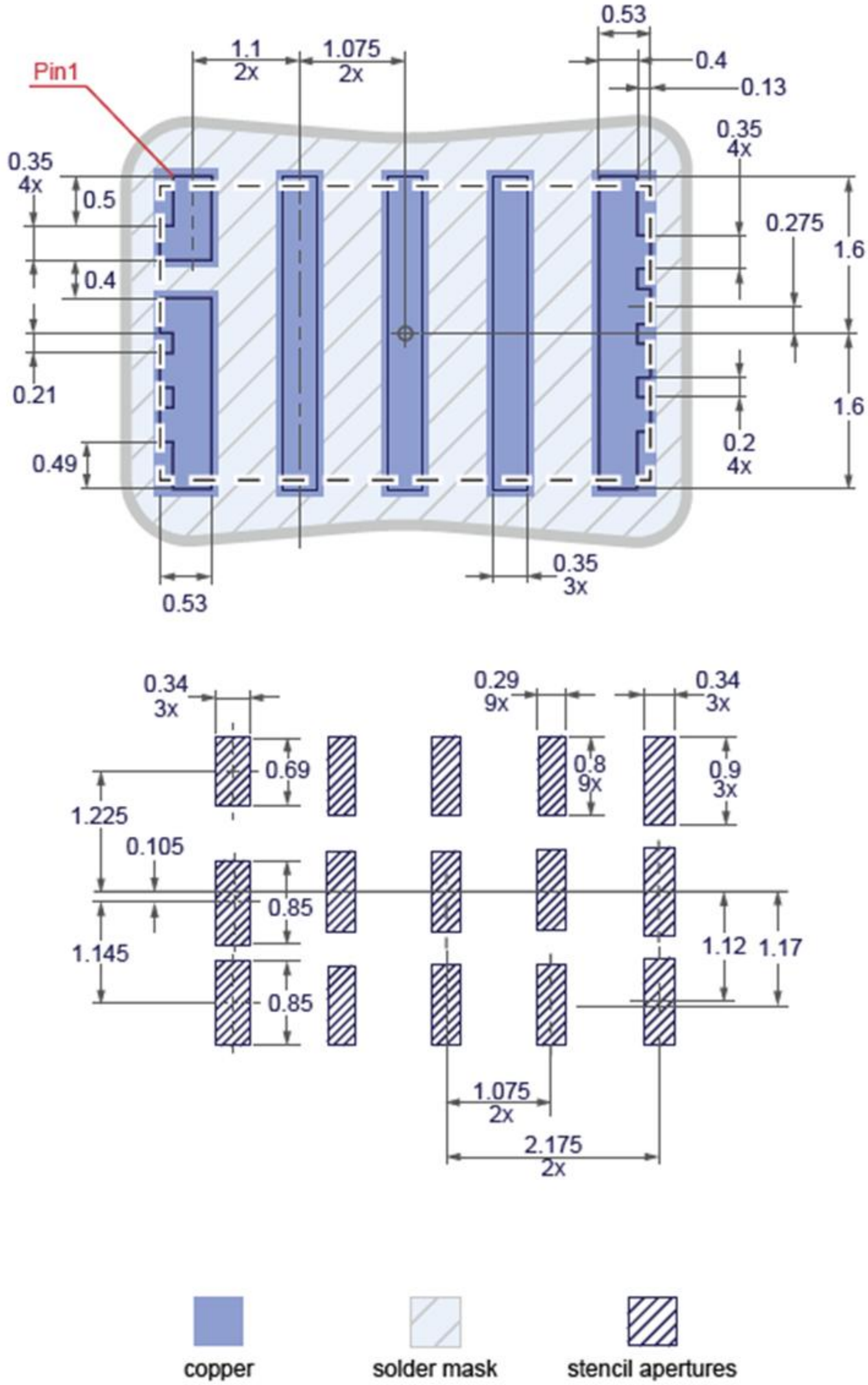




Package Top and Bottom View

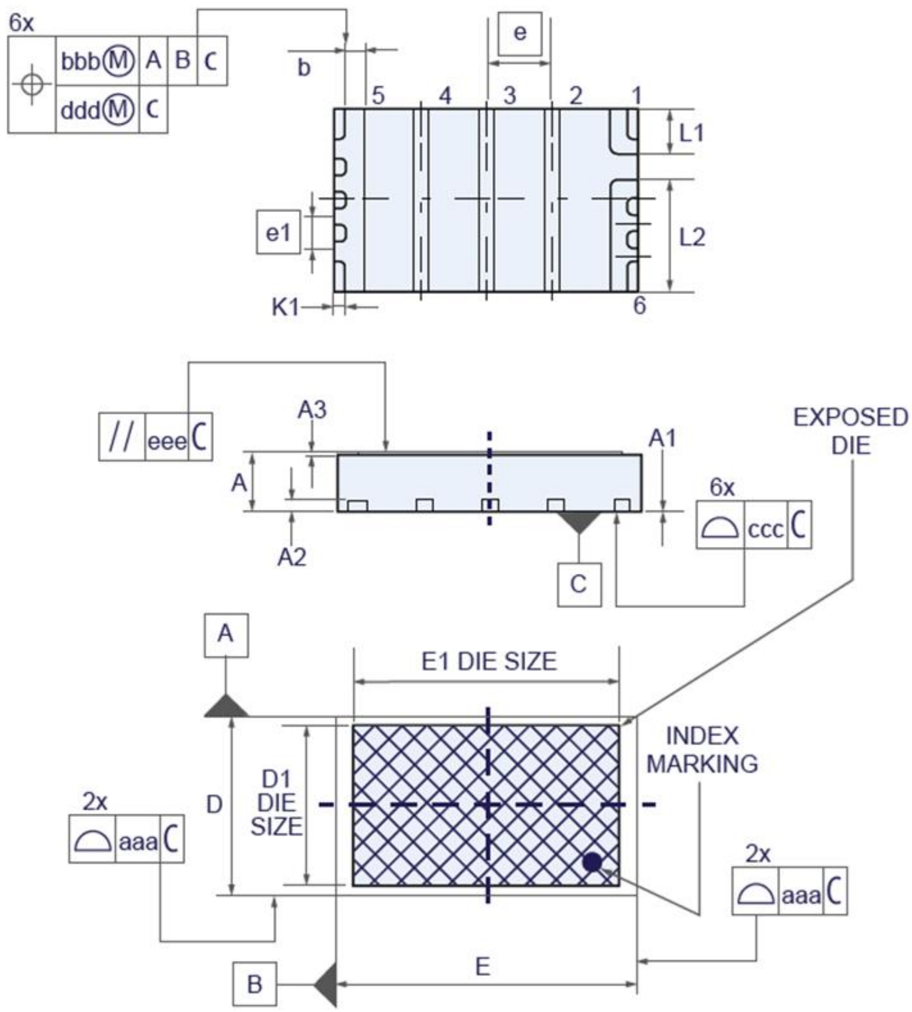
Pin Number	Pin Name	Description
1	G	Gate of power FET
2, 4	D	Drain of power FET
3, 5, 6	S	Source of power FET.

7. Recommended PCB Land Pattern



Based on stencil thickness 0.13mm
All dimensions are in units mm

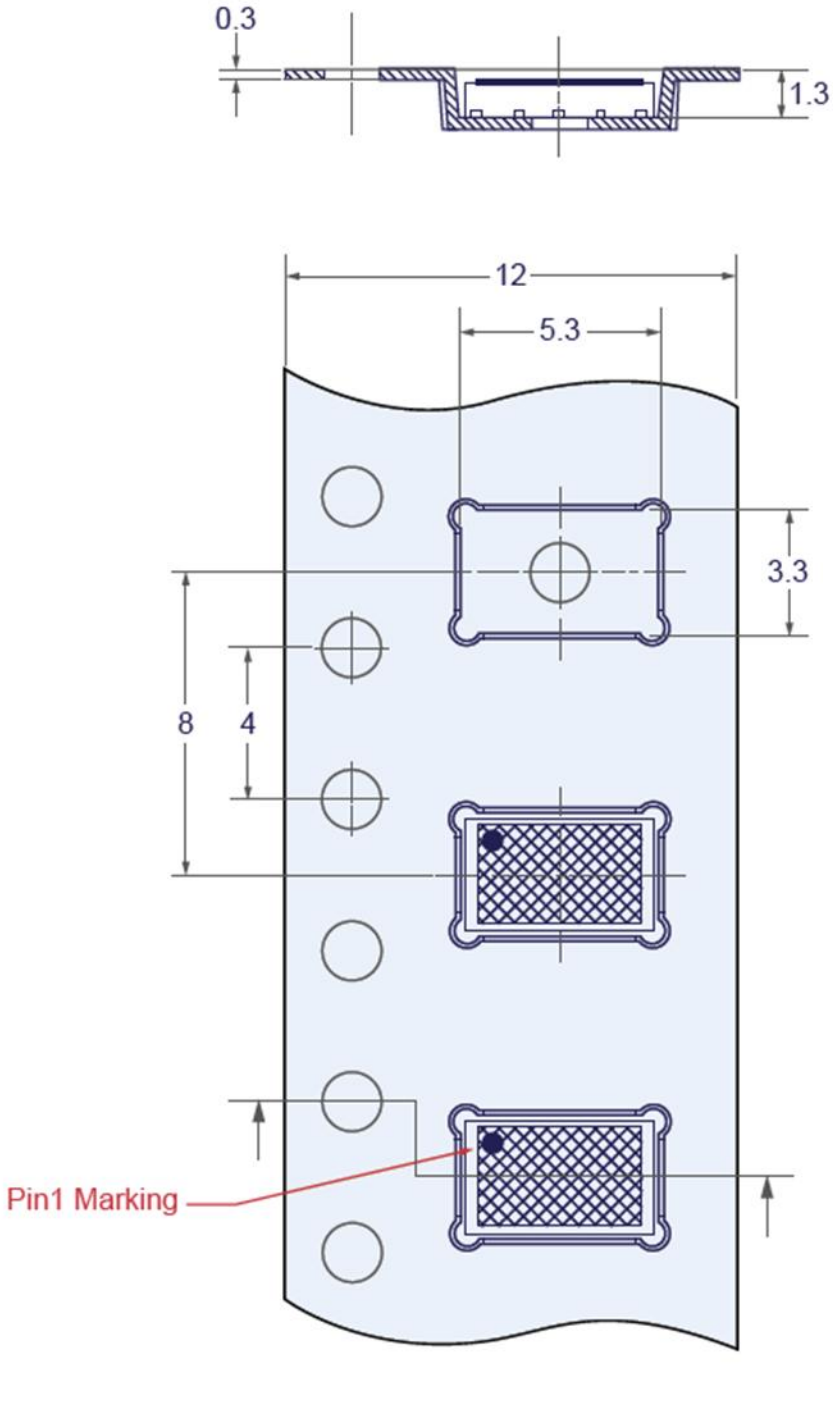
8. PQFN Package Outline



PACKAGE - GROUP NUMBER:	PQFN 3x5 mm	
DIMENSIONS	MILLIMETERS	
	MIN.	MAX.
A	-	1.032
A1	-	0.05
A2	0.20	
A3	-	0.05
b	0.18	0.30
D	2.90	3.10
D1	2.616	
E	4.90	5.10
E1	4.336	
e	1.075	
e1	0.55	
K1	0.125	0.225
L1	0.625	0.825
L2	1.725	1.925
aaa	0.05	
bbb	0.10	
ccc	0.08	
ddd	0.05	
eee	0.10	

Note: Dimensions do not include
Mold Flash, Protrusion or Gate Burrs

9. Tape and Reel Dimensions



All dimensions are in units mm

10. Ordering Information

Part Number	Operating Temperature Grade	Storage Temperature Range	Package	MSL Rating	Packing (Tape & Reel)
NVG025A08TC	-40 °C to +150 °C T_J	-55 °C to +150 °C T_{STOR}	PQFN-TC 3x5 mm	1	5,000 : 13” Reel

11. Revision History

Date	Status	Notes
October 24, 2025	Preliminary	First Publication
October 30, 2025	Preliminary	Update characteristic curves
November 26, 2025	Final	First Publication

Additional Information

Contact info@navitassemi.com