

Description

The TN2425N8-G is the new generation trench N-ch MOSFET has been designed to minimize the on-state resistance ($R_{DS(ON)}$) yet maintain superior switching performance, making it ideal for high efficiency power management applications

Features

- Low Gate Charge
- Low On Resistance
- Fast switching Characteristic

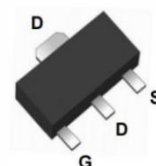
Applications

- DC-DC converters
- Load Switch
- Power Management

V_{DSS}	250V
I_D	2.1A
$R_{DS(ON)}$	$1.6\Omega @ V_{GS}=10V$
$R_{DS(ON)}$	$1.8\Omega @ V_{GS}=4.5V$

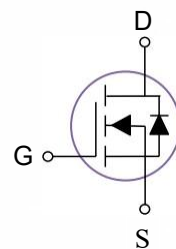
Outline

SOT-89 Pin Configuration



Equivalent

- (1)Gate
(2)Source
(3)Drain



Packaging specifications

Part No.	Package	Marking	Basic ordering unit.(pcs)
TN2425N8-G	SOT-89		1000

Absolute Maximum Ratings

Parameter		Symbol	Limit	Units
Drain-Source Voltage		V_{DS}	250	V
Gate-Source Voltage		V_{GS}	± 20	V
Drain Current-Continuous ^(Note 2)	$T_C=25^\circ C$	I_D	2.1	A
	$T_C=70^\circ C$		1.68	A
-Pulsed ^(Note 1, Note 2)		I_{DM}	4.4	A
Maximum Power Dissipation	$T_C=25^\circ C$	P_D	23	W
	$T_C=100^\circ C$		9.2	W
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55 to 150	$^\circ C$
Thermal Resistance Junction-Ambient		$R_{\theta JA}$	55	$^\circ C/W$
Thermal Resistance Junction-Case		$R_{\theta JC}$	5.5	$^\circ C/W$

Electrical Characteristics (T_c=25 °C, unless otherwise noted)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V , I _D =250uA	250			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =200V , V _{GS} =0V			1	uA
Gate-Body Leakage Current	I _{GSS}	V _{GS} = ±20V , V _{DS} =0V			±100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D =250uA	1	1.5	2.5	V
Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} =10V , I _D =0.5A		1.6	1.9	Ω
		V _{GS} =4.5V , I _D =0.3A		1.8	2.1	Ω
DYNAMIC CHARACTERISTICS Note4						
Input Capacitance	C _{ISS}	V _{DS} =120V , V _{GS} =0 V , f =1.0MHz		450		pF
Output Capacitance	C _{OSS}			22		pF
Reverse Transfer Capacitance	C _{RSS}			14		pF
Total Gate Charge	Qg	V _{DS} =120V , I _D =0.5A , V _{GS} =10V		6.8		nC
Gate-Source Charge	Qgs	V _{DS} =120V , I _D =0.5A , V _{GS} =10V		1.2		nC
Gate-Drain Charge	Qgd			2.4		nC
SWITCHING CHARACTERISTICS Note4						
Turn-On Delay Time	t _{D(ON)}	V _{DD} =120V , I _D =0.5A , V _{GS} =10V , R _G =6Ω		11		ns
Rise Time	tr			26		ns
Turn-Off Delay Time	t _{D(OFF)}			48		ns
Fall Time	tf			35		ns
DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS						
Diode Forward Voltage	V _{SD}	V _{GS} =0V , I _S =0.5A			1.2	V

Notes:

- 1、Pulse Test Width < 300us,Duty Cycle< 2%
- 2、Drain current limited by maximum junction temperature.
- 3、Guaranteed by design,not subject to production testing.

Typical Performance Characteristics

Fig.1 Continuous Drain Current vs. TC

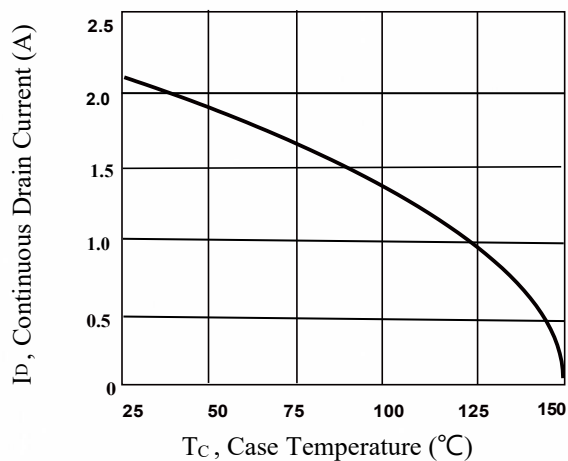


Fig.2 Normalized $R_{DS(on)}$ vs. T_J

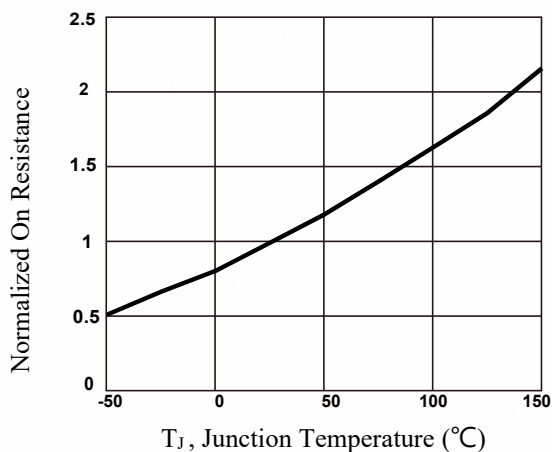


Fig.3 Normalized V_{th} vs. T_J

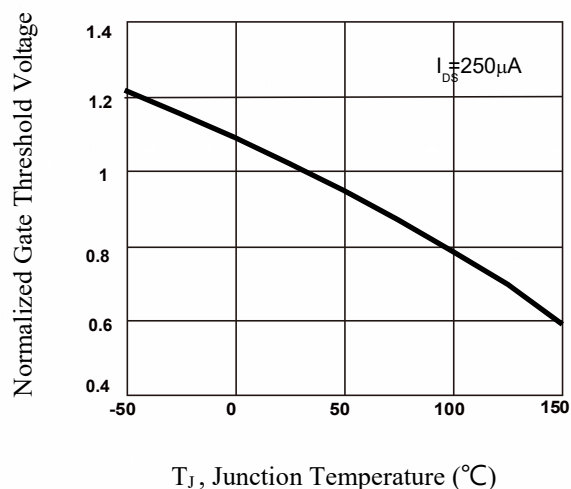


Fig.4 Gate Charge Waveform

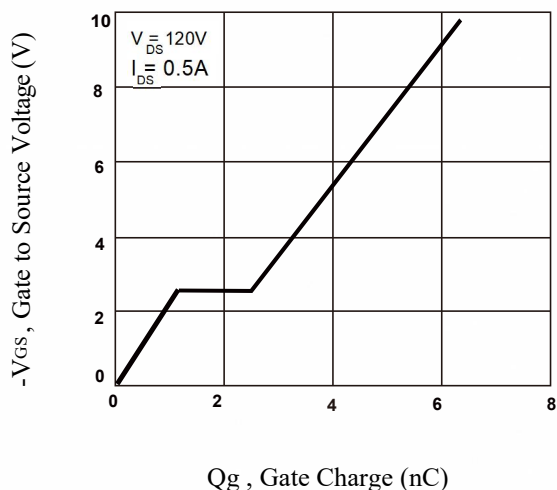


Fig.5 Typical Output Characteristics

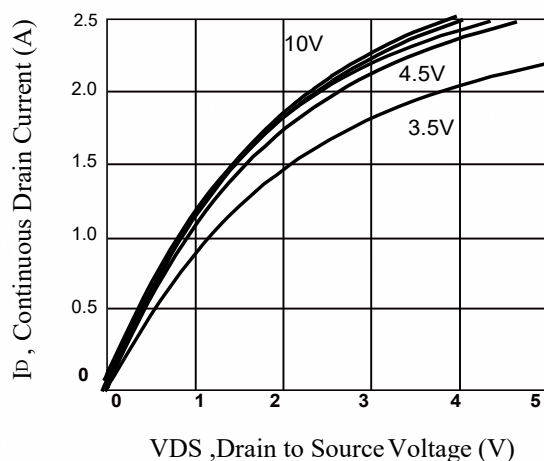


Fig.6 Capacitance

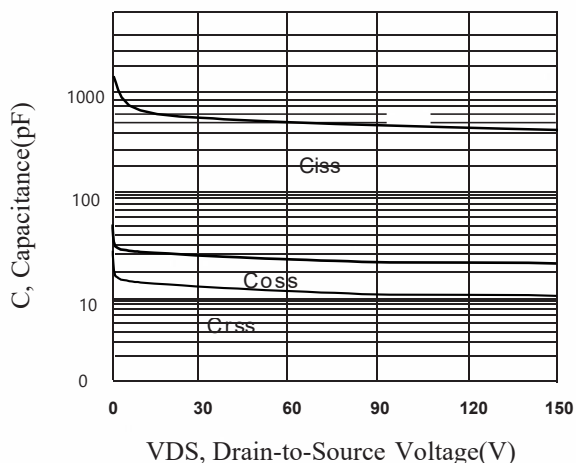


Fig.7 Turn-On Resistance vs. ID

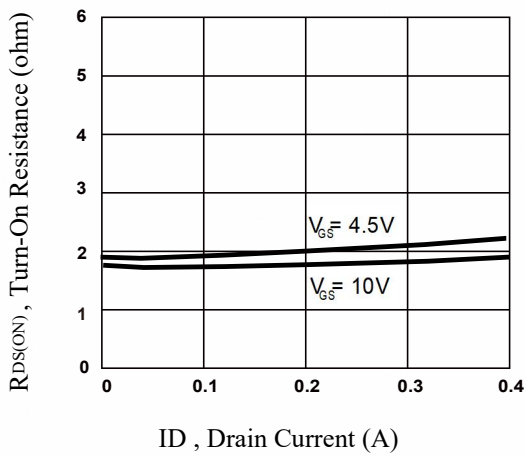


Fig.8 Typical Source-Drain Diode Forward Voltage

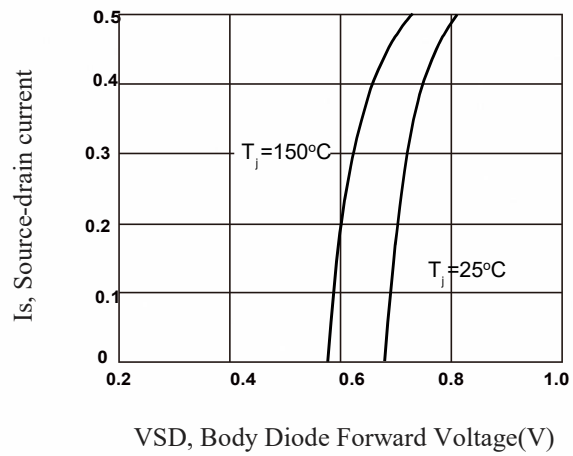


Fig.9 Normalized Transient Impedance

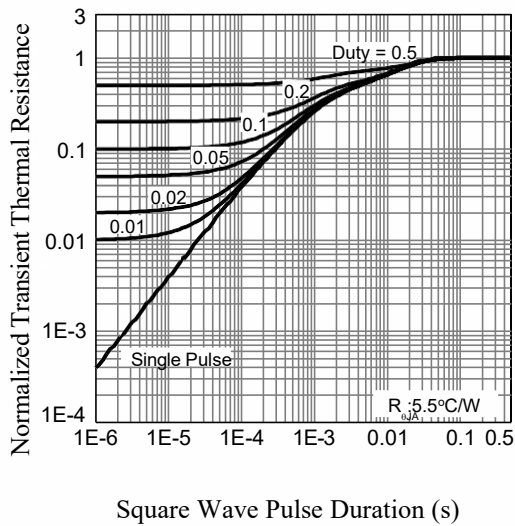


Fig.10 Maximum Safe Operation Area

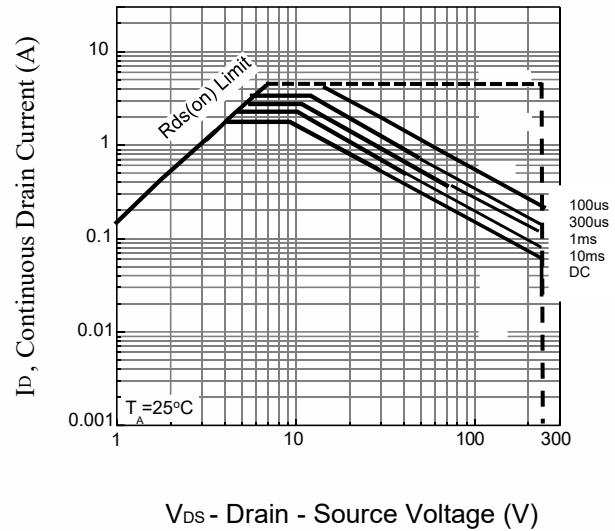


Figure11a. Switching Test Circuit

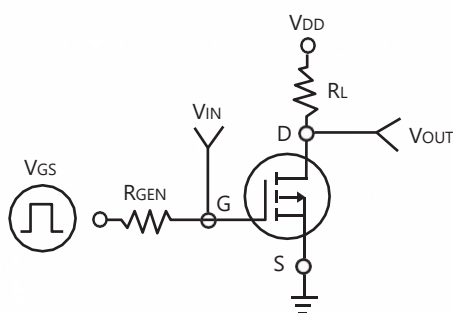
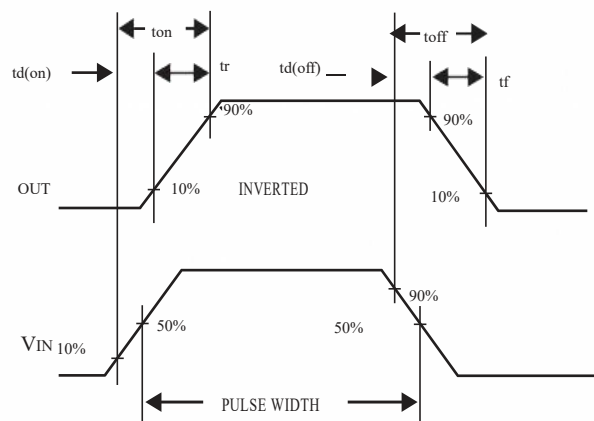
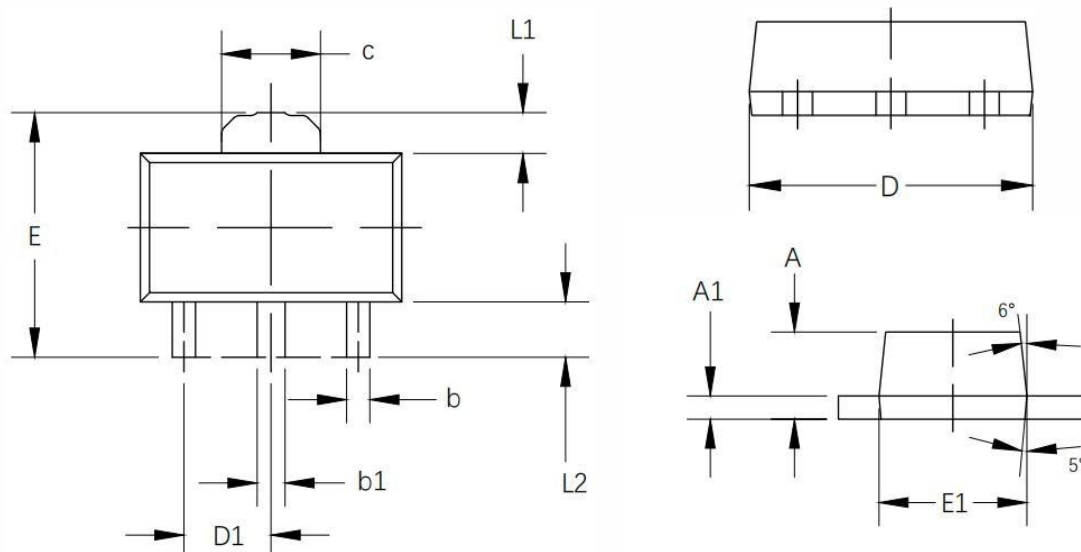


Figure 11b. Switching Waveforms



SOT-89 Package Information



COMMON
DIMENSION(MM)

SYMBOL	MIN	TYP	MAX
A	1.450	1.500	1.550
A1	0.373	0.381	0.389
b	0.415	0.440	0.465
b1	0.495	0.520	0.545
c	1.675	1.700	1.725
D	4.445	4.500	4.550
D1	1.470	1.500	1.550
E	4.100	4.200	4.300
E1	2.450	2.500	2.550
L1	0.630	0.680	0.730
L2	0.890	0.940	0.990

NOTICE

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