



STN7120DN
N Channel Enhancement Mode MOSFET



50A

DESCRIPTION

STN7120DN uses Trench MOSFET technology that is uniquely optimized to provide the most efficient high frequency switching performance. It has been optimized for low gate charge, low $R_{DS(ON)}$ and fast switching speed.

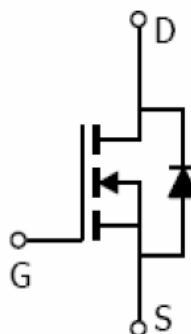
PIN CONFIGURATION POWER PACK 5x6



Y : Year Code
A : Date Code
B : Package Code
C : Process Code

FEATURE

- 60V/10A, $R_{DS(ON)} = 12m\Omega$
@ $V_{GS} = 10V$
60V/8A, $R_{DS(ON)} = 15m\Omega$
@ $V_{GS} = 4.5V$
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- PPAK5x6 package design



ABSOLUTE MAXIMUM RATINGS (Ta = 25°C Unless otherwise noted)

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Parameter		Symbol	Typical	Unit
Drain-Source Voltage		VDSS	60	V
Gate-Source Voltage		VGSS	±20	V
Continuous Drain Current (TJ=150°C)	TA=25°C TA=100°C	ID	50 31	A
Pulsed Drain Current		IDM	200	A
Continuous Source Current (Diode Conduction)		IS	35	A
Power Dissipation	TA=25°C	PD	96	W
Operation Junction Temperature		TJ	150	°C
Storage Temperature Range		TSTG	-55/150	°C
Thermal Resistance-Junction to Ambient		RθJA	62	°C/W



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ELECTRICAL CHARACTERISTICS (Ta = 25°C Unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} =0V, I _D =250uA	60			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250uA	1.0		2.5	V
Gate Leakage Current	I _{GSS}	V _{DS} =0V, V _{GS} =±20V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =60V, V _{GS} =0V			1	uA
		V _{DS} =48V, V _{GS} =0V T _J =125°C			10	
Drain-source On-Resistance	R _{DS(on)}	V _{GS} =10V, I _D =10A V _{GS} =4.5V, I _D =8A		10 12	12 15	mΩ
Forward Transconductance	g _{fs}	V _{DS} =10V, I _D =6A		11.7		S
Diode Forward Voltage	V _{SD}	I _S =1.0A, V _{GS} =0V			1.0	V
Dynamic						
Total Gate Charge	Q _g	V _{DS} =30V, V _{GS} =10V I _D ≡10A		39.4	59	nC
Gate-Source Charge	Q _{gs}			5.9	9	
Gate-Drain Charge	Q _{gd}			8.8	14	
Input Capacitance	C _{iss}	V _{DS} =25V, V _{GS} =0V F=1MHz		2100	3050	pF
Output Capacitance	C _{oss}			165	240	
Reverse TransferCapacitance	C _{rss}			80	120	
Turn-On Time	t _{d(on)} tr	V _{DS} =15V, I _D =1A V _{GS} =10V, R _G =6Ω		9.8	18	nS
Turn-Off Time	t _{d(off)} tf			28.2	54	
				45.3	86	
				10.9	21	

TYPICAL CHARACTERISTICS

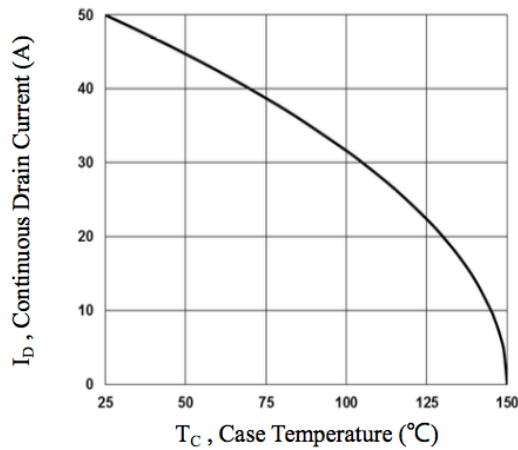


Fig.1 Continuous Drain Current vs. T_C

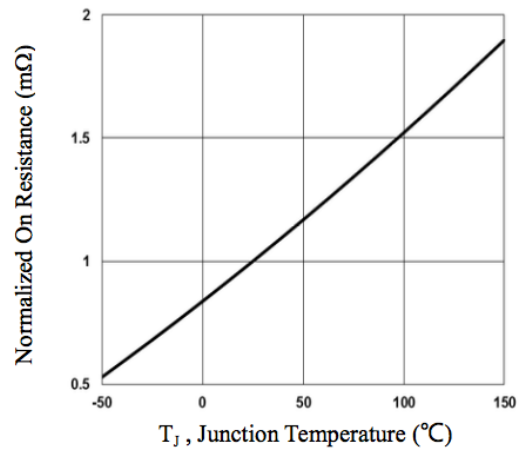


Fig.2 Normalized $R_{DS(on)}$ vs. T_J

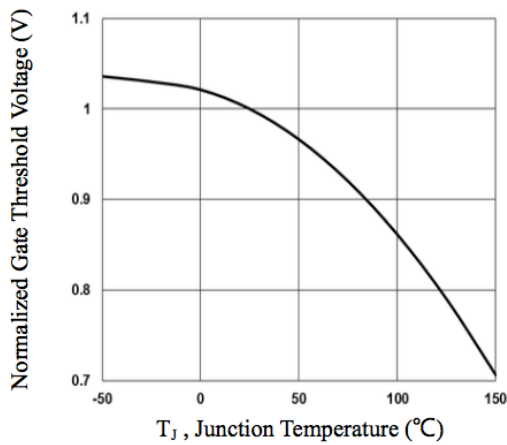


Fig.3 Normalized V_{th} vs. T_J

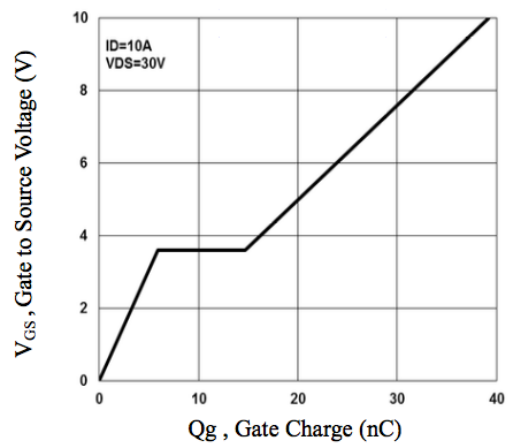


Fig.4 Gate Charge Waveform

TYPICAL CHARACTERISTICS

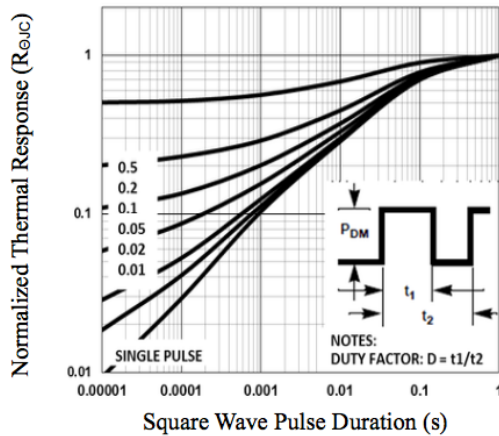


Fig.5 Normalized Transient Response

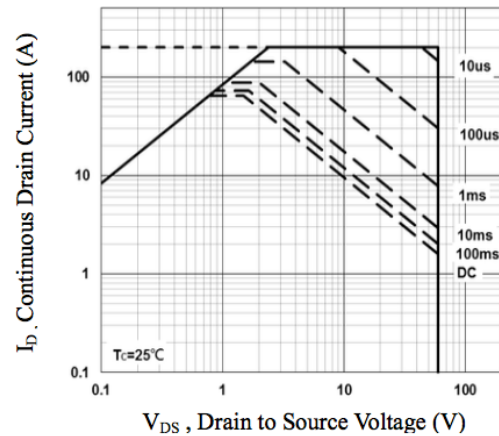


Fig.6 Maximum Safe Operation Area

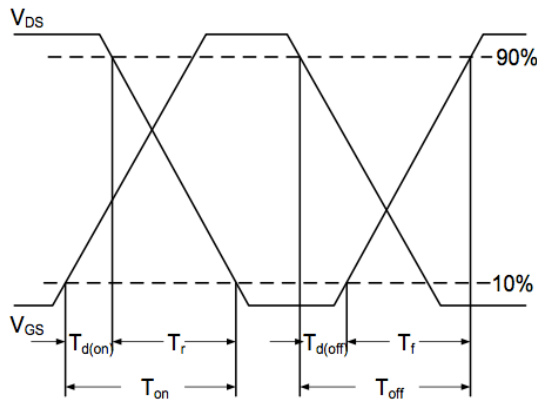


Fig.7 Switching Time Waveform

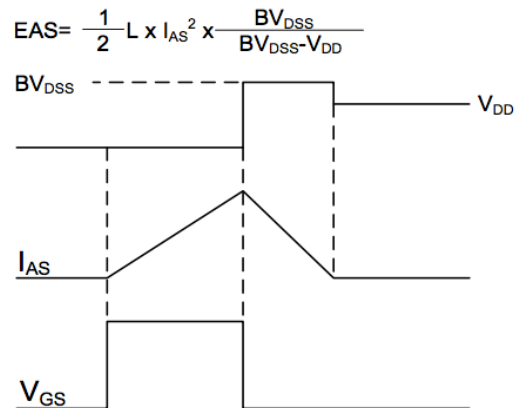


Fig.8 EAS Waveform

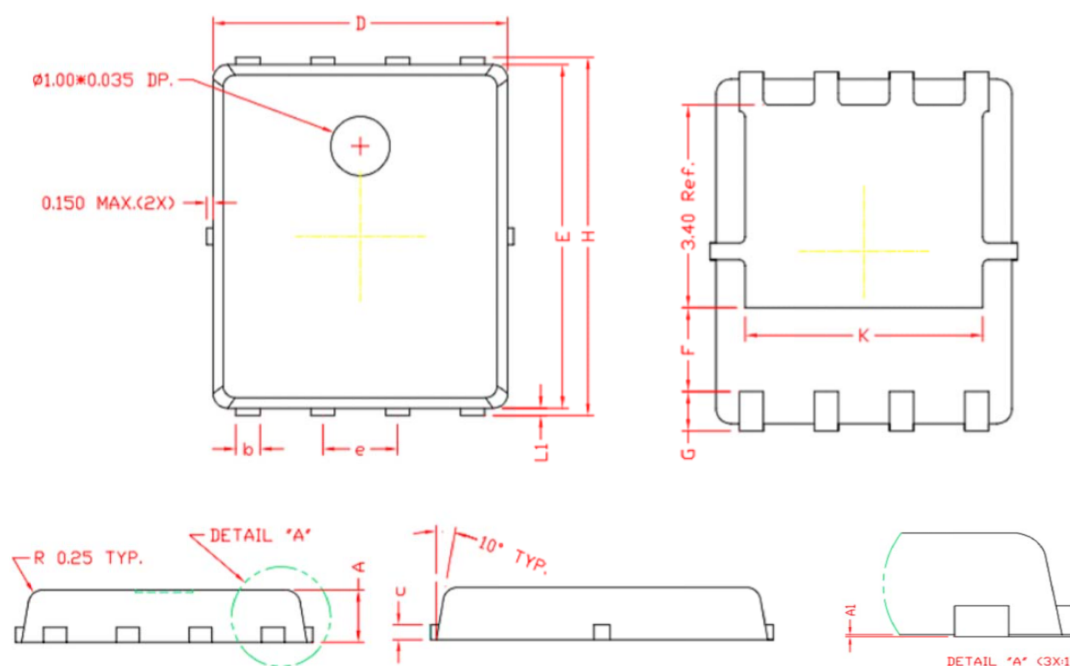


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POWER PACKAGE 5x6 OUTLINE



(UNITS OF MEASURE=MILLIMETER)

SYMBOL	MIN	NOM	MAX
A	0.80	0.90	1.00
A1	0.00	0.03	0.05
b	0.35	0.42	0.49
c	0.254 REF.		
D	4.90	5.00	5.10
F	1.40 REF.		
E	5.70	5.80	5.90
e	1.27 BSC.		
H	5.95	6.08	6.20
L1	0.10	0.14	0.18
G	0.60 REF.		
K	4.00 REF.		

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