STN456DN

N Channel Enhancement Mode MOSFET

70A

DESCRIPTION

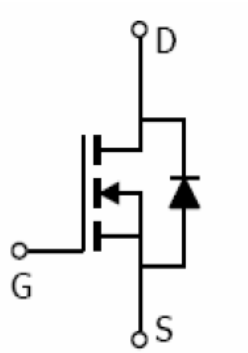
STN456DN uses Trench MOSFET technology that is uniquely optimized to provide the most efficient nigh frequency switching performance. It has been optimized for low gate charge, low $R_{DS(ON)}$ and fast switching speed.

PIN CONFIGURATION
POWER PACK 5x6 (1212-8L)

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

FEATURE

- 30V/30A, $R_{DS(ON)}$ = 4.0mΩ（Typ.）
  @V_{GS} = 10V
- 30V/15A, $R_{DS(ON)}$ = 5.8mΩ
  @V_{GS} = 4.5V
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- PPAK5x6 (1212-8L) package design



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ABSOULTE MAXIMUM RATINGS (Ta = 25℃ Unless otherwise noted)

Parameter		Symbol	Typical	Unit
Drain-Source Voltage		VDSS	30	V
Gate-Source Voltage		VGSS	±20	V
Continuous Drain Current (TJ=150℃)	TA=25℃ TA=70℃	ID	35 21	A
Pulsed Drain Current		IDM	70	A
Continuous Source Current (Diode Conduction)		IS	90	A
Power Dissipation	TA=25℃	PD	74	W
Operation Junction Temperature		TJ	150	℃
Storage Temperature Range		TSTG	-55/150	℃
Thermal Resistance-Junction to Ambient		RθJA	62	℃/W

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ELECTRICAL CHARACTERISTICS (Ta = 25℃ Unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V,ID=250uA	30			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},ID=250uA	1.2		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}=24V,V_{GS}=0V			1	uA
		V_{DS}=24V,V_{GS}=0V T_J=55℃			5	
Drain-source On-Resistance	$R_{DS(on)}$	V_{GS}=10V,I_D=30A V_{GS}=4.5V,I_D=15A		5.5 7.5	6.5 9.0	mΩ
Forward Transconductance	gfs	V_{DS}=5V,I_D=30A		43		S
Diode Forward Voltage	V_{SD}	I_S=1.0A,V_{GS}=0V			1.0	V
Dynamic						
Total Gate Charge	Q_g	V_{DS}=15V,V_{GS}=4.5V I_D≡15A		20		nC
Gate-Source Charge	Q_{gs}			7.6		
Gate-Drain Charge	Q_{gd}			7.2		
Input Capacitance	C_{iss}	V_{DS} =15V,V_{GS}=0V F=1MHz		2295		pF
Output Capacitance	C_{oss}			267		
Reverse TransferCapacitance	C_{rss}			210		
Turn-On Time	$t_{d(on)}$	V_{DD}=15V,I_D=15A V_{GS}=10V, R_G=3.3Ω		7.8		nS
	tr			15		
Turn-Off Time	$t_{d(off)}$			37.3		
	tf			1.6		

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TYPICAL CHARACTERICTICS (Tj=25℃ unless otherwise noted)

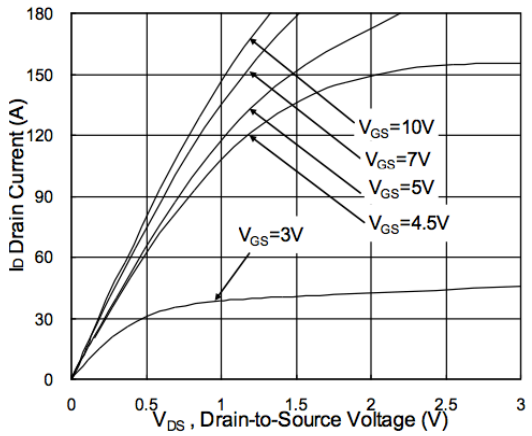

Fig.1 Typical Output Characteristics

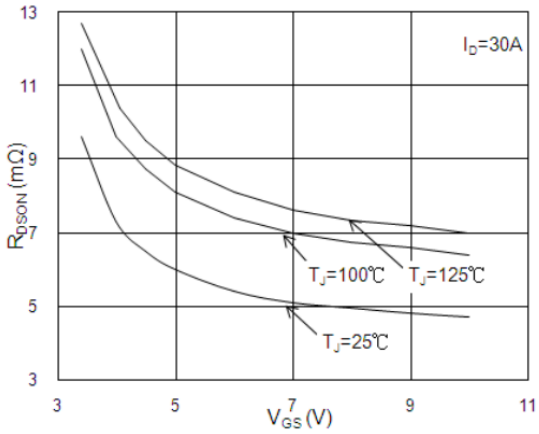

Fig.2 On-Resistance vs. G-S Voltage

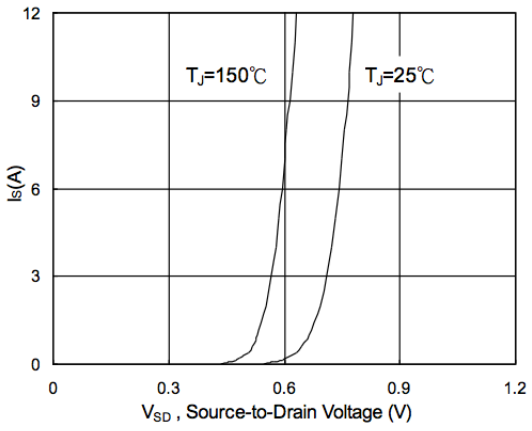

Fig.3 Forward Characteristics of Reverse

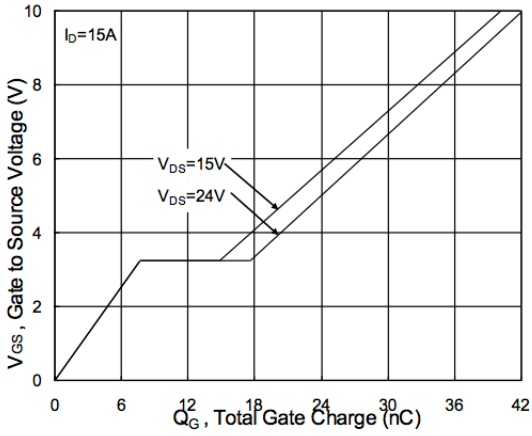

Fig.4 Gate-Charge Characteristics

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TYPICAL CHARACTERICTICS (Tj=25℃ unless otherwise noted)

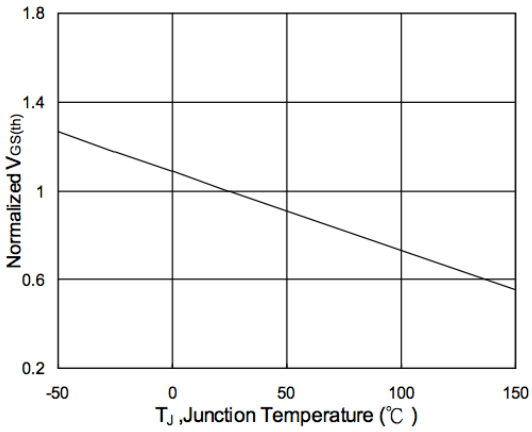

Fig.5 Normalized $V_{GS(th)}$ vs. T_J

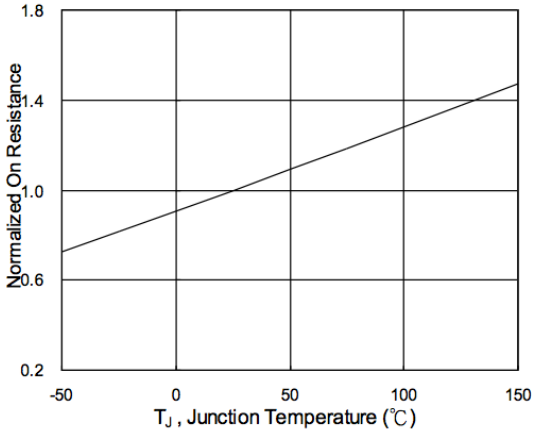

Fig.6 Normalized R_{DSON} vs. T_J

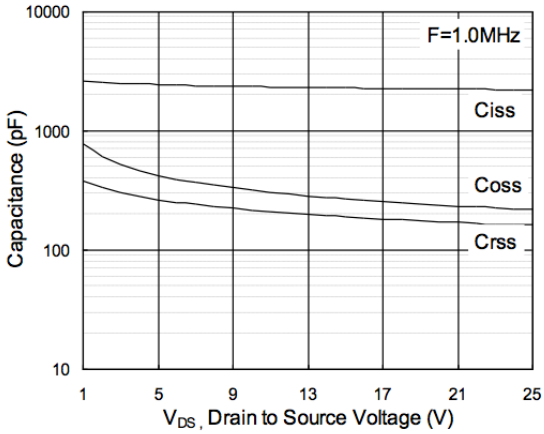

Fig.7 Capacitance

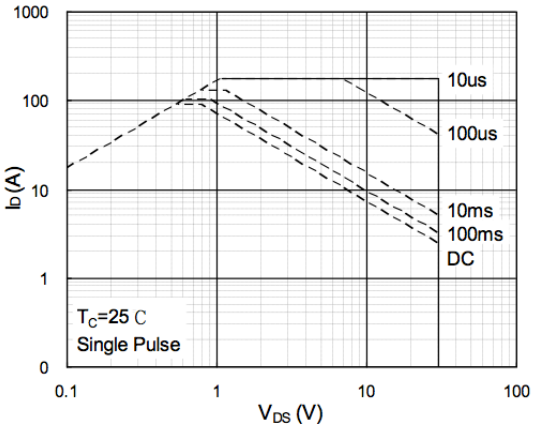

Fig.8 Safe Operating Area

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TYPICAL CHARACTERICTICS (Tj=25℃ unless otherwise noted)

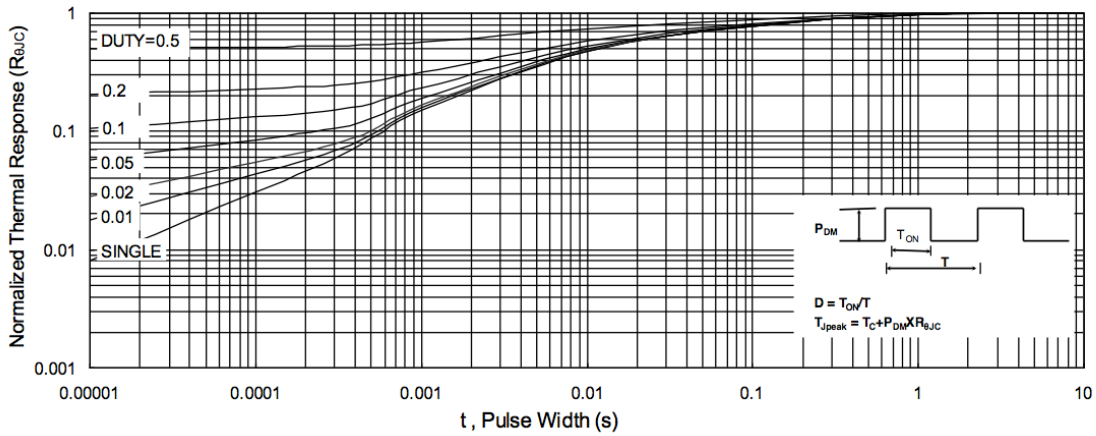


Fig.9 Normalized Maximum Transient Thermal Impedance

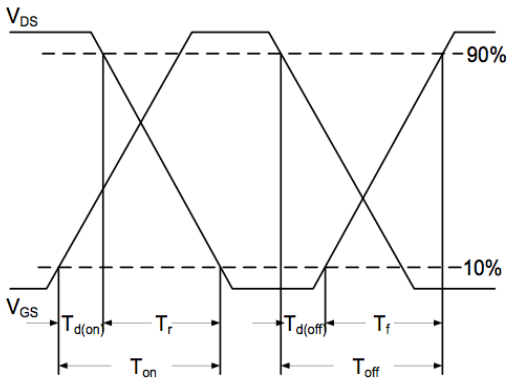


Fig.10 Switching Time Waveform

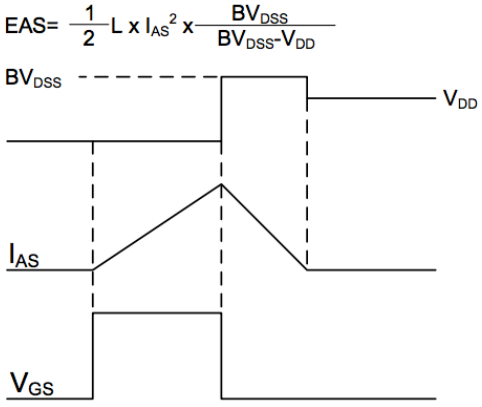
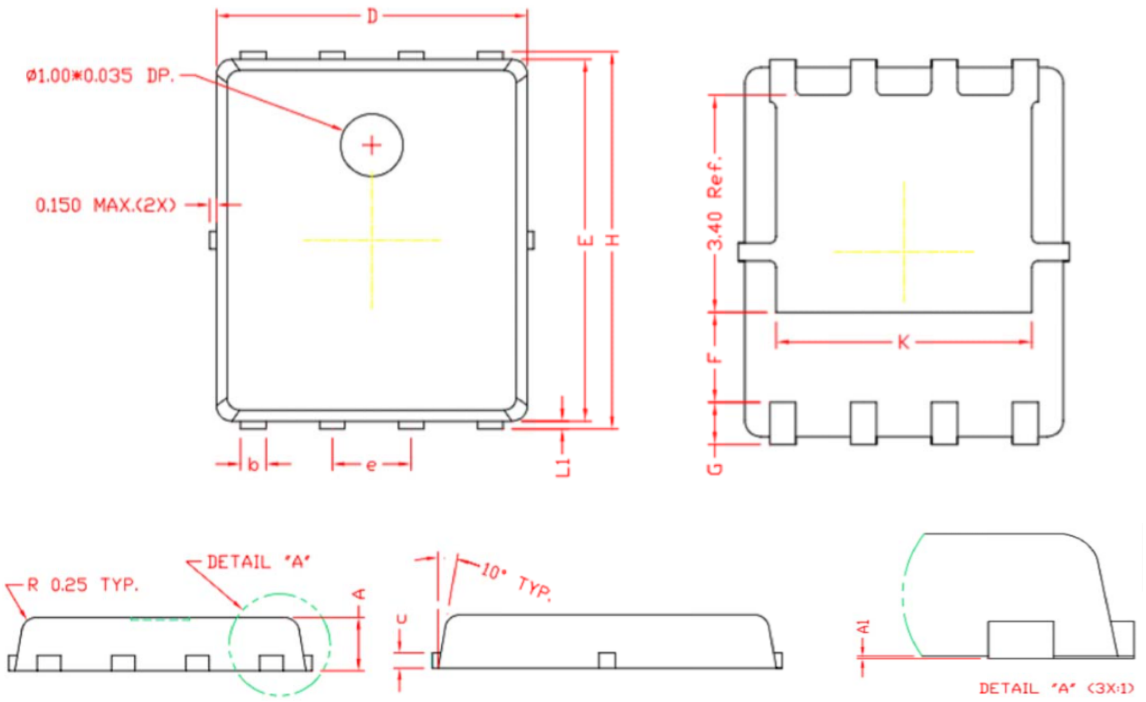


Fig.11 Unclamped Inductive Switching Waveform

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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