ST16N10

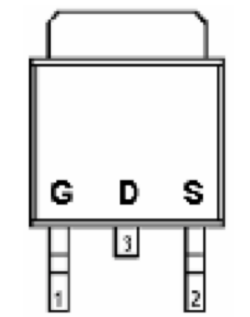
N Channel Enhancement Mode MOSFET

16.0A

DESCRIPTION

ST16N10 is the N-Channel logic enhancement mode power field effect transistor which is produced using high cell density, DMOS trench technology. The ST16N10 has been designed specially to improve the overall efficiency of DC/DC converters using either synchronous or conventional switching PWM controllers. It has been optimized for low gate charge, low $R_{DS(ON)}$ and fast switching speed.

PIN CONFIGURATION
TO-252

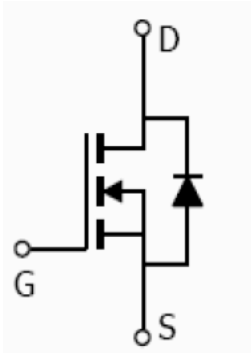


FEATURE

- 100V/16.0A, $R_{DS(ON)}$ = 140mΩ（Typ）
  @V_{GS} = 4.5V
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- TO-252 Package design

PART MARKING

Y: Year Code
A: Date Code
B: Wafer Code



STANSON TECHNOLOGY
120 Bentley Square, Mountain View, Ca 94040 USA
www.stansontech.com

ST16N10

N Channel Enhancement Mode MOSFET

16.0A

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

Parameter		Symbol	Typical	Unit
Drain-Source Voltage		VDSS	100	V
Gate-Source Voltage		VGSS	±20	V
Continuous Drain Current (TJ=150℃)	TA=25℃ TA=100℃	ID	16.0 8.0	A
Pulsed Drain Current		IDM	50	A
Continuous Source Current (Diode Conduction)		IS	15	A
Power Dissipation	TA=25℃	PD	79	W
Operation Junction Temperature		TJ	150	℃
Storgae Temperature Range		TSTG	-55/150	℃
Thermal Resistance-Junction to Ambient		RθJA	110	℃/W

STANSON TECHNOLOGY
120 Bentley Square, Mountain View, Ca 94040 USA
www.stansontech.com

STANSON

ST16N10

N Channel Enhancement Mode MOSFET

16.0A

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=250mA	100			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},ID=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}=100V,V_{GS}=0V			25	uA
		V_{DS}=80V,V_{GS}=0V T_J=150℃			250	
On-State Drain Current	$I_{D(on)}$	V_{DS}≧5V,V_{GS}=10V	50			A
Drain-source On-Resistance	$R_{DS(on)}$	V_{GS}=4.5V,I_D=16A		140	150	mΩ
Forward Transconductance	gfs	V_{DS}=50V,I_D=9.0A	6.4			S
Diode Forward Voltage	V_{SD}	I_S=9.0A,V_{GS}=0V			1.2	V
Dynamic						
Total Gate Charge	Q_g	V_{DS}=80V,V_{GS}=10V I_D≡9.0A			45	nC
Gate-Source Charge	Q_{gs}				7.2	
Gate-Drain Charge	Q_{gd}				22	
Input Capacitance	C_{iss}	V_{DS} =25V,V_{GS}=0V F=1MHz		640		pF
Output Capacitance	C_{oss}			160		
Reverse TransferCapacitance	C_{rss}			88		
Turn-On Time	$t_{d(on)}$ tr	V_{DD}=50V,R_D= 5.5Ω I_D=9.0A,V_{GEN}=10V R_G=12Ω		7.4		nS
				29		
Turn-Off Time	$t_{d(off)}$ tf			40		
				25		

STANSON TECHNOLOGY
120 Bentley Square, Mountain View, Ca 94040 USA
www.stansontech.com

TYPICAL CHARACTERICTICS

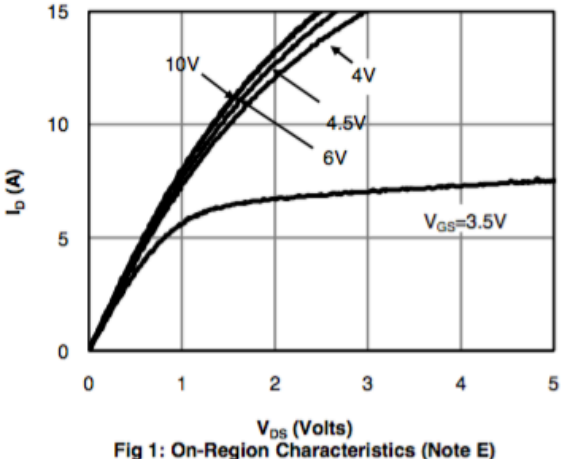


Fig 1: On-Region Characteristics (Note E)

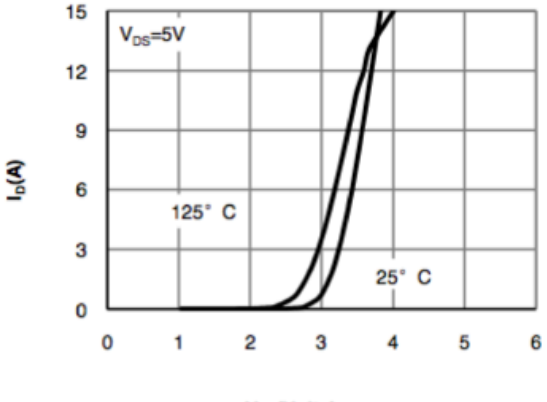


Figure 2: Transfer Characteristics (Note E)

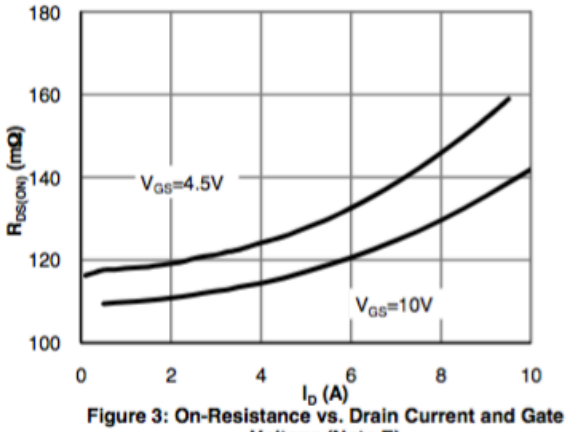


Figure 3: On-Resistance vs. Drain Current and Gate Voltage (Note E)

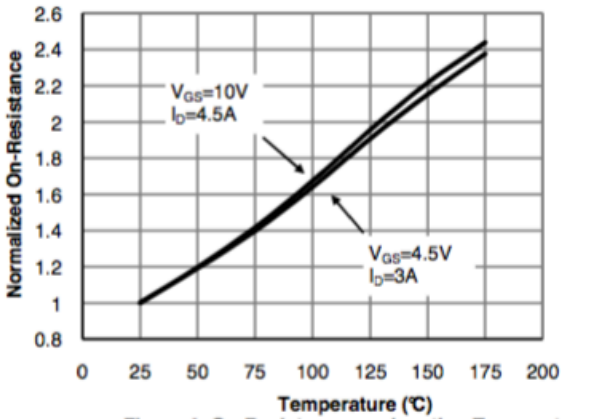


Figure 4: On-Resistance vs. Junction Temperature (Note E)

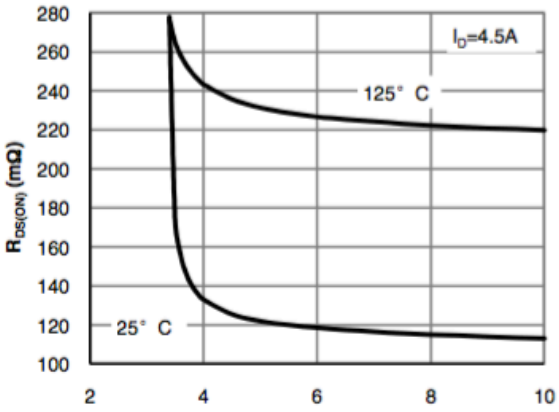


Figure 5: On-Resistance vs. Gate-Source Voltage (Note E)

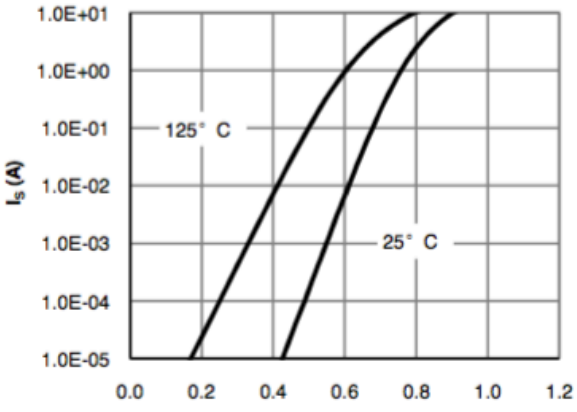


Figure 6: Body-Diode Characteristics (Note E)

STANSON TECHNOLOGY
120 Bentley Square, Mountain View, Ca 94040 USA
www.stansontech.com

TYPICAL CHARACTERICTICS

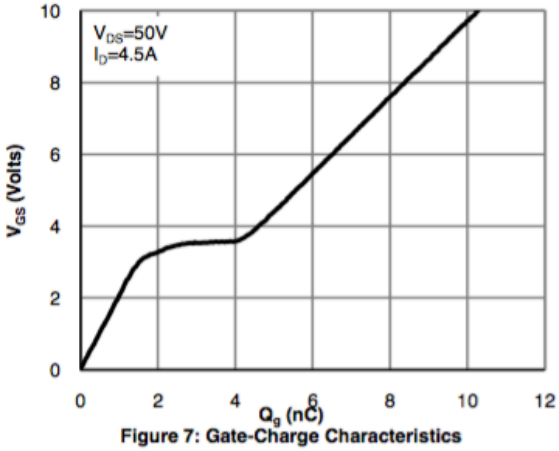


Figure 7: Gate-Charge Characteristics

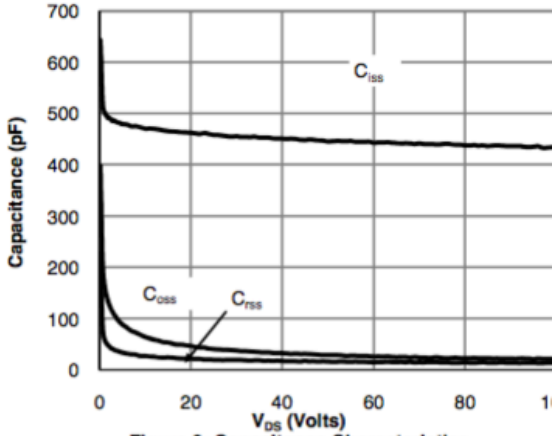


Figure 8: Capacitance Characteristics

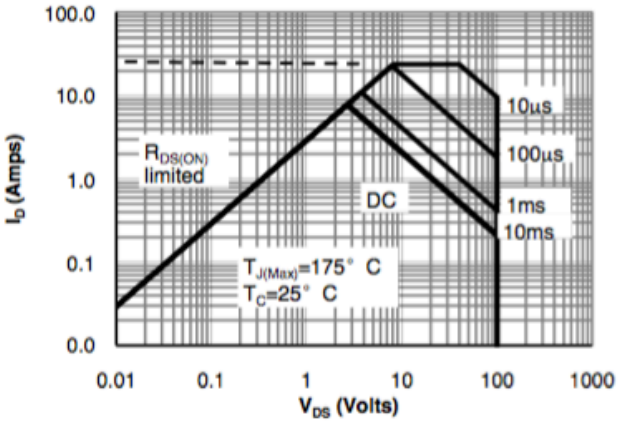


Figure 9: Maximum Forward Biased Safe Operating Area (Note F)

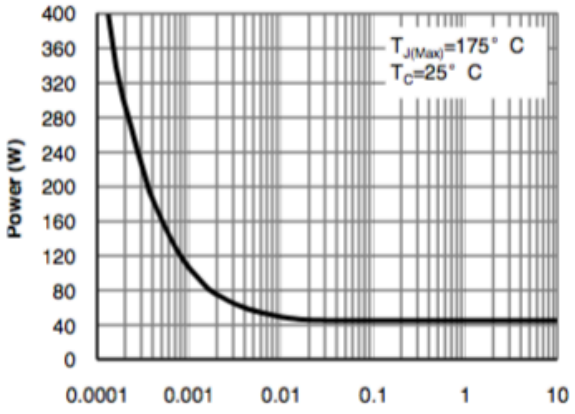


Figure 10: Single Pulse Power Rating Junction-Case (Note F)

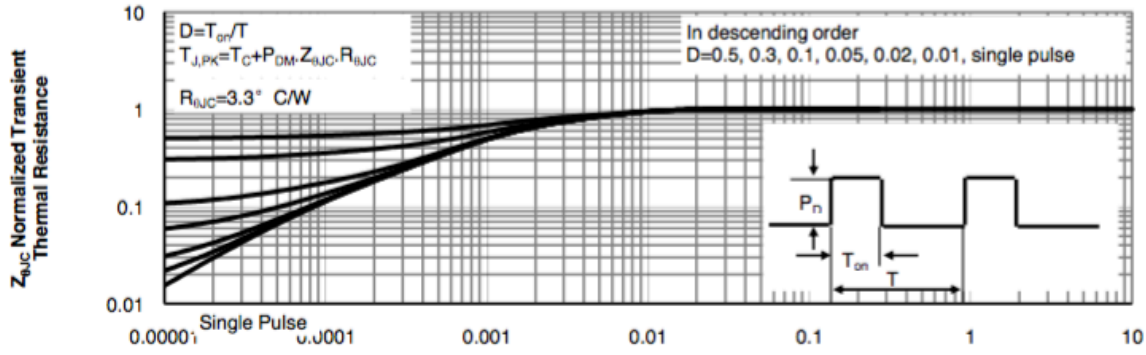


Figure 11: Normalized Maximum Transient Thermal Impedance (Note F)

STANSON TECHNOLOGY
120 Bentley Square, Mountain View, Ca 94040 USA
www.stansontech.com

TYPICAL CHARACTERICTICS

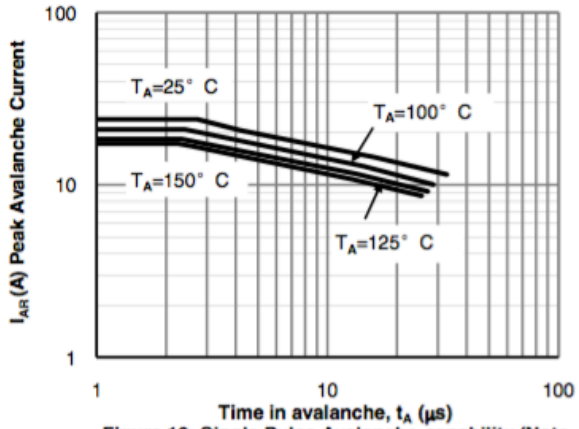


Figure 12: Single Pulse Avalanche capability (Note C)

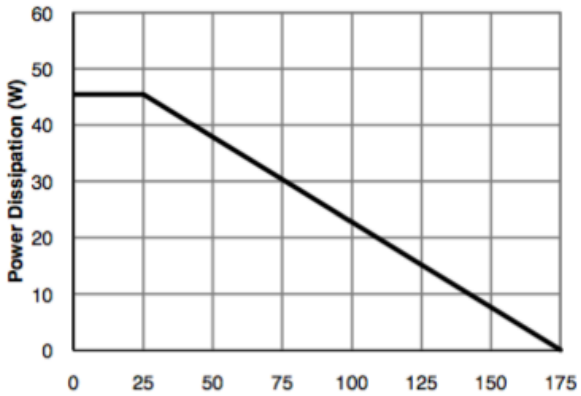


Figure 13: Power De-rating (Note F)

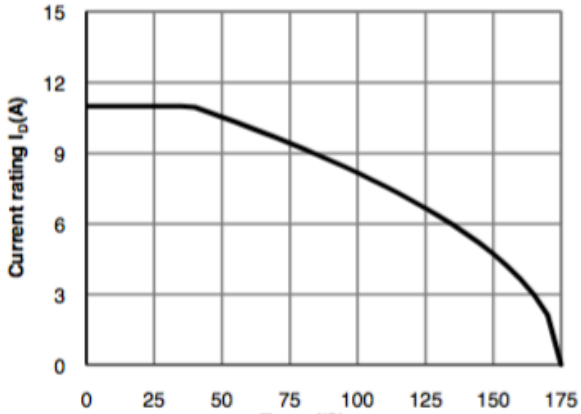


Figure 14: Current De-rating (Note F)

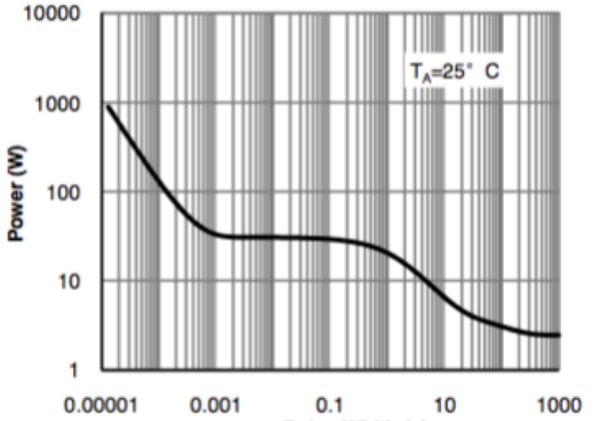


Figure 15: Single Pulse Power Rating Junction-to-Ambient (Note H)

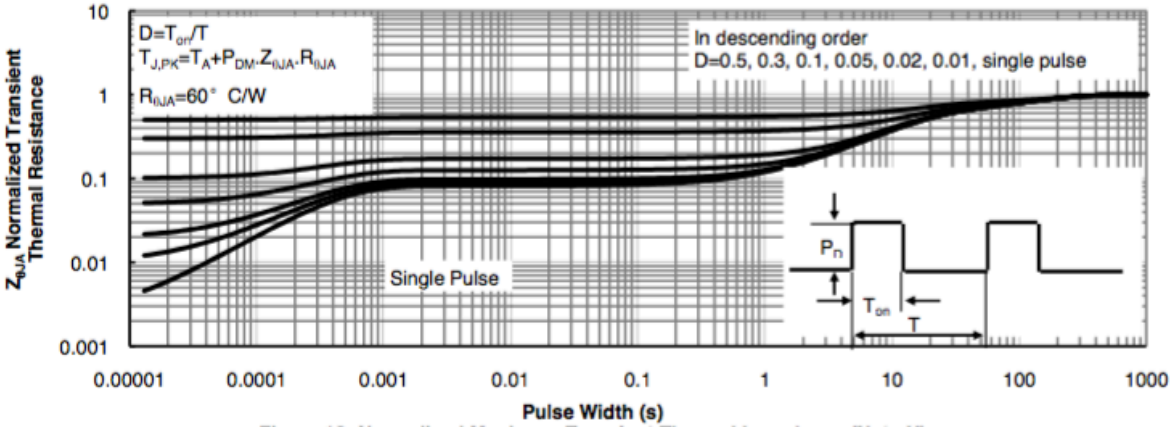
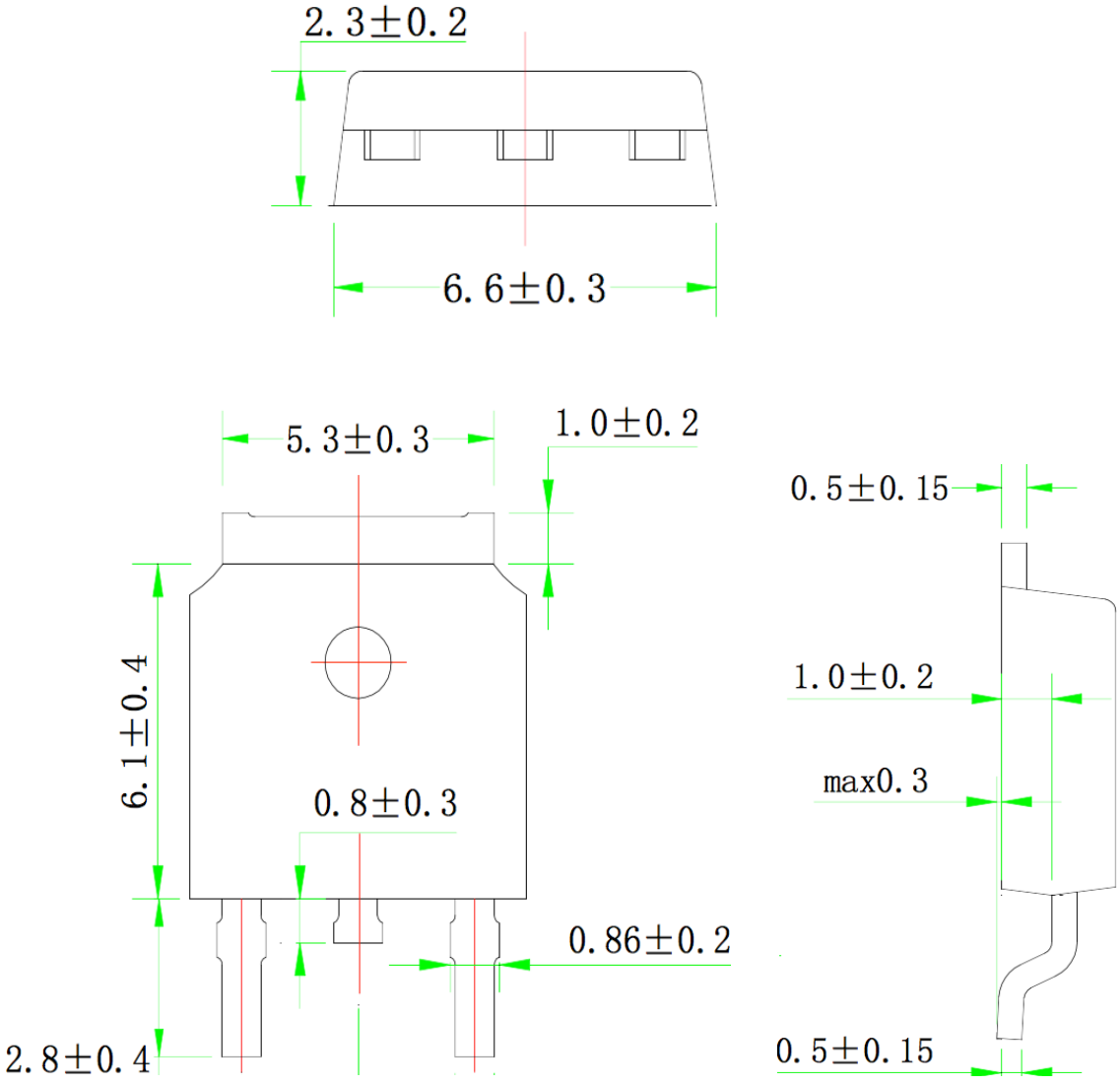


Figure 16: Normalized Maximum Transient Thermal Impedance (Note H)

STANSON TECHNOLOGY
120 Bentley Square, Mountain View, Ca 94040 USA
www.stansontech.com

TO-252-2L PACKAGE OUTLINE



STANSON TECHNOLOGY
120 Bentley Square, Mountain View, Ca 94040 USA
www.stansontech.com