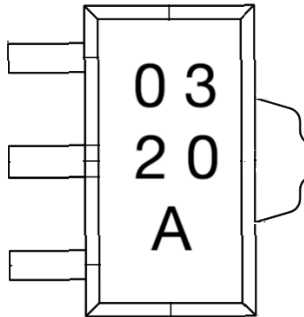


DESCRIPTION

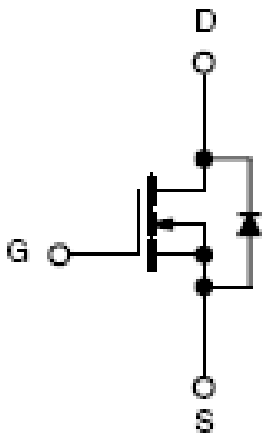
ST03N20 is the N-Channel logic enhancement mode power field effect transistor which is produced using high cell density, DMOS trench technology. This high density process is especially tailored to minimize on-state resistance. These devices are particularly suited for low voltage application such as power management and other battery powered circuits where high-side switching.

PIN CONFIGURATION
SOT-89-3L


0320 : Product Code
A : Date Code

FEATURE

- 200V/2A, $R_{DS(ON)} = 850m\Omega$
 @ $V_{GS} = 10V$
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- SOT-89 package design





ST03N20 

N Channel Enhancement Mode MOSFET

1.9A

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

Parameter	Symbol	Typical	Unit
Drain-Source Voltage	VDSS	200	V
Gate-Source Voltage	VGSS	±30	V
Continuous Drain Current (TJ=150°C)	ID	TA=25°C 1.9	A
		TA=100°C 0.8	
Pulsed Drain Current	IDM	9	A
Power Dissipation	PD	TA=25°C 1.78	W
Operation Junction Temperature	TJ	-55/150	°C
Storage Temperature Range	TSTG	-55/150	°C
Thermal Resistance-Junction to Ambient	RθJA	75	°C/W

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

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	200			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	3	4	5	V
Gate Leakage Current	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 30V$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=160V, V_{GS}=0V$			1	μA
Drain-source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=12A$		750	850	m Ω
Forward Transconductance	gfs	$V_{DS}=10V, I_D=2A$		3.6		S
Diode Forward Voltage	V_{SD}	$I_S=1A, V_{GS}=0V$			1	V
Dynamic						
Total Gate Charge	Q_g	$V_{DS}=160V, V_{GS}=10V$ $I_D=1 A$			9	nC
Gate-Source Charge	Q_{gs}				4	
Gate-Drain Charge	Q_{gd}				2	
Input Capacitance	C_{iss}	$V_{DS}=25V, V_{GS}=0V$ $f=1MHz$		260	500	pF
Output Capacitance	C_{oss}			160	300	
Reverse Transfer Capacitance	C_{rss}			55	110	
Turn-On Time	$t_{d(on)}$ t_r	$V_{DS}=100$ $V_{GEN}=10V, I_D=1A$ $R_G=25\Omega$		10	20	nS
				35	70	
Turn-Off Time	$t_{d(off)}$ t_f			10	20	
				28	56	

TYPICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$ Unless otherwise noted)

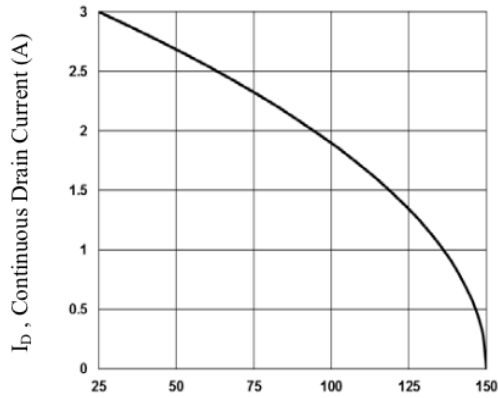


Fig.1 Continuous Drain Current vs. T_c

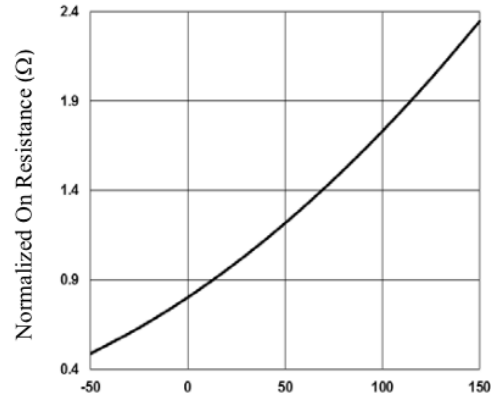


Fig.2 Normalized $R_{DS(on)}$ vs. T_j

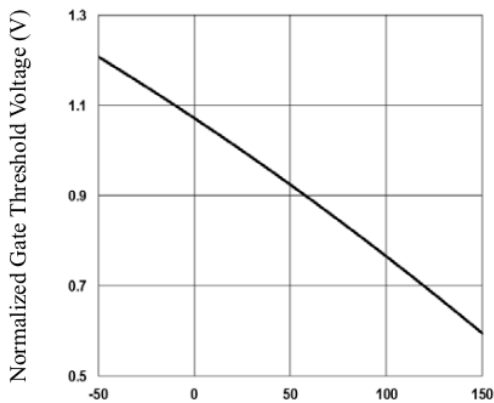


Fig.3 Normalized V_{th} vs. T_j

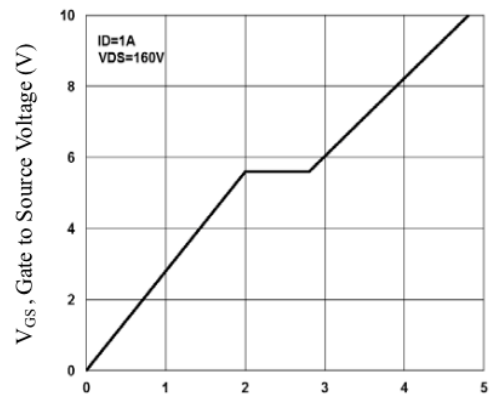
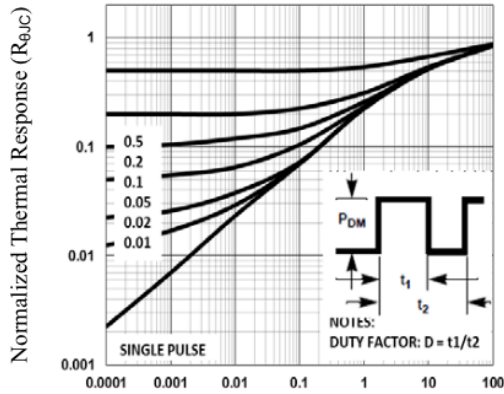
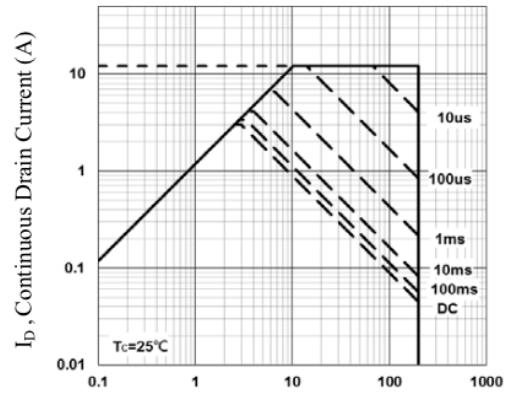
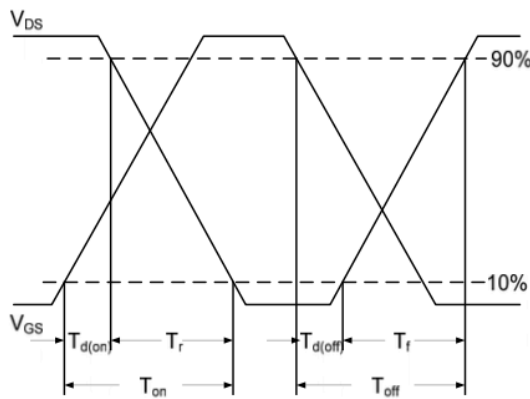
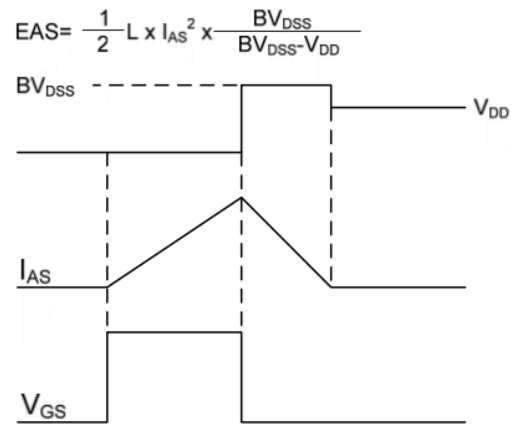
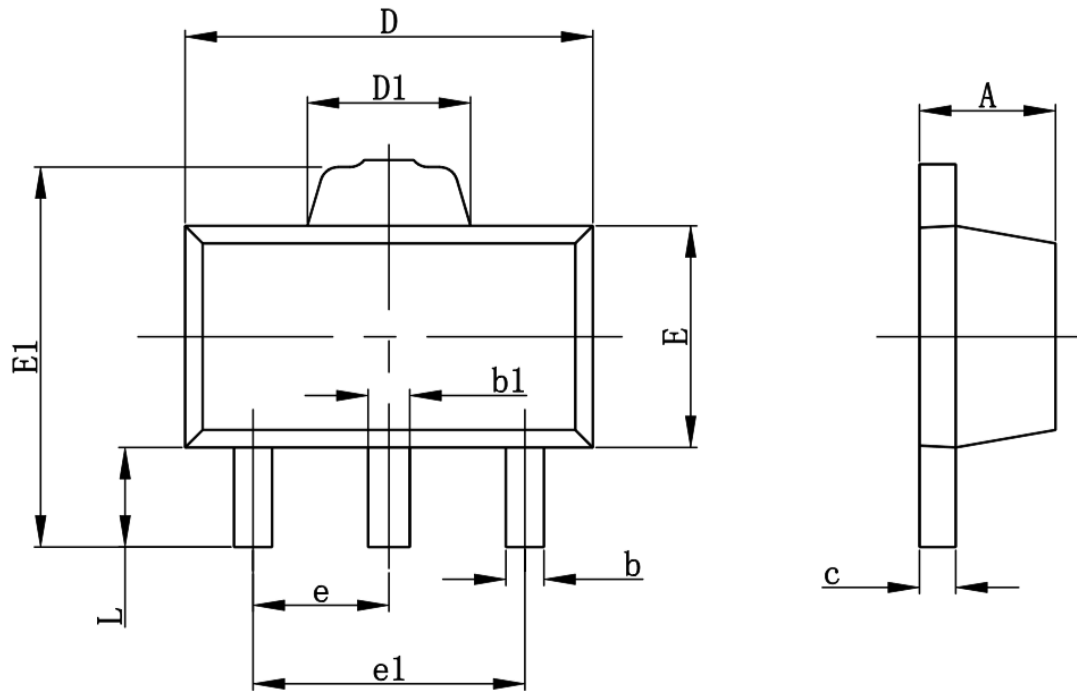


Fig.4 Gate Charge Waveform

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

Fig.5 Normalized Transient Impedance

Fig.6 Maximum Safe Operation Area

Fig.7 Switching Time Waveform

Fig.8 EAS Waveform

PACKAGE OUTLINE SOT-89-3L


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.400	1.600	0.055	0.063
b	0.320	0.520	0.013	0.020
b1	0.360	0.560	0.014	0.022
c	0.350	0.440	0.014	0.017
D	4.400	4.600	0.173	0.181
D1	1.400	1.800	0.055	0.071
E	2.300	2.600	0.091	0.102
E1	3.940	4.250	0.155	0.167
e	1.500TYP		0.060TYP	
e1	2.900	3.100	0.114	0.122
L	0.900	1.100	0.035	0.043