VST018N10MS

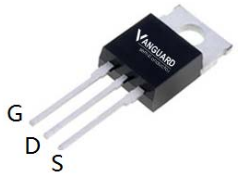
100V/60A N-Channel Advanced Power MOSFET

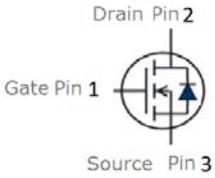
Features

- N-Channel，5V Logic Level Control
- Enhancement mode
- Very low on-resistance $R_{DS(on)}$ @ V_{GS}=4.5 V
- Fast Switching
- 100% Avalanche Tested
- Pb-free lead plating; RoHS compliant

V_{DS}	100	V
$R_{DS(on),TYP}$@ V_{GS}=10V	14	mΩ
$R_{DS(on),TYP}$@ V_{GS}=4.5 V	15	mΩ
I_D	60	A

TO-220AB





Part ID	Package Type	Marking	Tape and reel information
VST018N10MS	TO-220AB	018N10M	50pcs/Tube

Maximum ratings, at T_j=25°C, unless otherwise specified

Symbol	Parameter		Rating	Unit
$V_{(BR)DSS}$	Drain-Source breakdown voltage		100	V
I_S	Diode continuous forward current	T_C =25°C	60	A
I_D	Continuous drain current @V_{GS}=10V	T_C =25°C	60	A
		T_C =100°C	38	A
I_{DM}	Pulse drain current tested ①	T_C =25°C	160	A
EAS	Avalanche energy, single pulsed ②		64	mJ
IAS	Avalanche Current Max	L=0.5mH	29	A
P_D	Maximum power dissipation	T_C =25°C	150	W
V_{GS}	Gate-Source voltage		±20	V
T_{STG} T_J	Storage and operating temperature range		-55 to 175	°C

Thermal Characteristics

Symbol	Parameter	Typical	Unit
$R_{\theta JC}$	Thermal Resistance-Junction to Case	1.0	°C/W
$R_{\theta JA}$	Thermal Resistance Junction-Ambient	42	°C/W

Symbol	Parameter	Condition	Min.	Typ.	Max.	Unit
Static Electrical Characteristics @ Tc = 25°C (unless otherwise stated)						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	VGS=0V ID=250μA	100	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current(Tc=25℃)	VDS=100V,VGS=0V	--	--	1	μA
	Zero Gate Voltage Drain Current(Tc=125℃)	VDS=100V,VGS=0V	--	--	100	μA
I_{GSS}	Gate-Body Leakage Current	VGS=±20V,VDS=0V	--	--	±100	nA
$V_{GS(TH)}$	Gate Threshold Voltage	VDS=VGS,ID=250μA	1.0	2.0	3.0	V
$R_{DS(ON)}$	Drain-Source On-State Resistance③	VGS=10V, ID=35A	--	14.0	18	mΩ
$R_{DS(ON)}$	Drain-Source On-State Resistance③	VGS=4.5V, ID=20A	--	15.0	20	mΩ
Dynamic Electrical Characteristics @ Tc= 25°C (unless otherwise stated)						
R_g	Gate Resistance	VDS=30V,VGS=0V, f=1MHz	--	1.5	--	Ω
C_{iss}	Input Capacitance			3040	--	pF
C_{oss}	Output Capacitance		--	195	--	pF
C_{rss}	Reverse Transfer Capacitance		--	125	--	pF
Q_g	Total Gate Charge	VDS=50V,ID=20A, VGS=10V	--	53	--	nC
Q_{gs}	Gate-Source Charge		--	13	--	nC
Q_{gd}	Gate-Drain Charge		--	16.5	--	nC
Switching Characteristics						
$t_{d(on)}$	Turn-on Delay Time	VDD=50V, ID=5A, RG=6.8Ω, VGS=10V	--	21	--	nS
t_r	Turn-on Rise Time		--	18	--	nS
$t_{d(off)}$	Turn-Off Delay Time		--	25	--	nS
t_f	Turn-Off Fall Time		--	10	--	nS
Source- Drain Diode Characteristics@ Tc = 25°C (unless otherwise stated)						
V_{SD}	Forward on voltage	ISD=35A,VGS=0V	--	0.88	1.2	V
t_{rr}	Reverse Recovery Time	Tj=25℃,Isd=20A, VGS=0V di/dt=500A/μs	--	20	--	nS
Q_{rr}	Reverse Recovery Charge			88		nC

NOTE:

① Repetitive rating; pulse width limited by max. junction temperature.

② Limited by TJmax, starting TJ = 25°C, L = 0.5mH,RG = 25Ω, IAS = 16A, VGS =10V. Part not recommended for use above this value

③ Pulse width ≤ 300μs; duty cycle≤ 2%.

Typical Characteristics

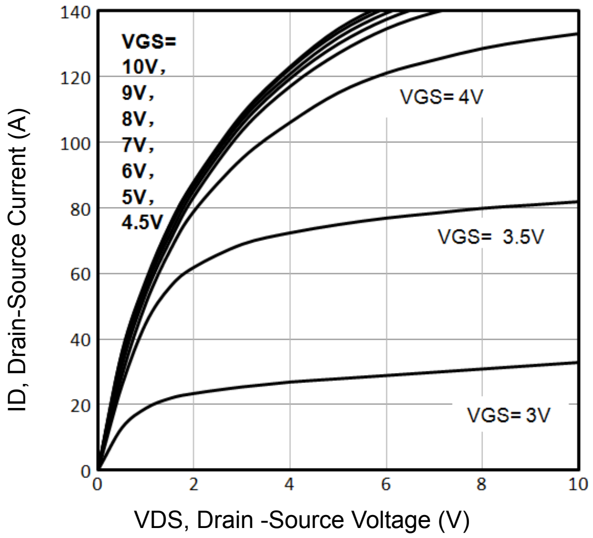


Fig1. Typical Output Characteristics

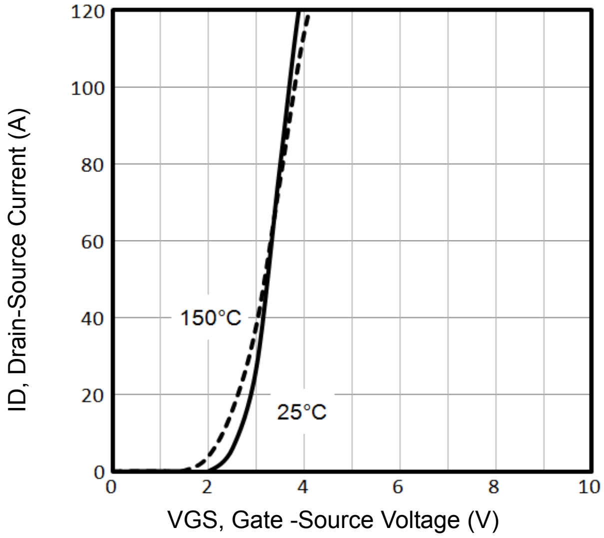


Fig2. Typical Transfer Characteristics

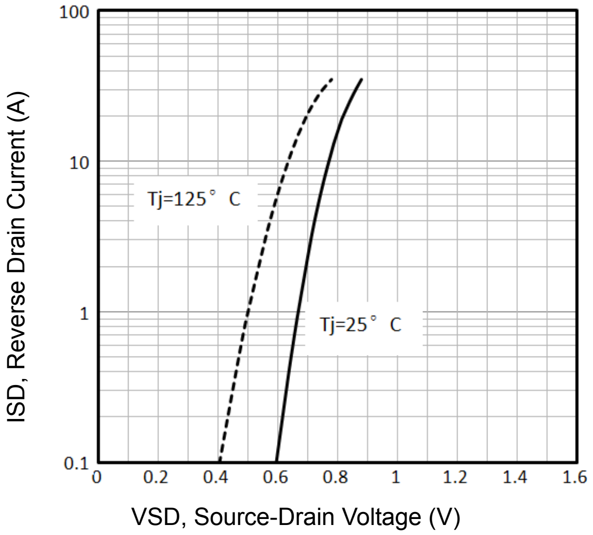


Fig3. Typical Source-Drain Diode Forward Voltage

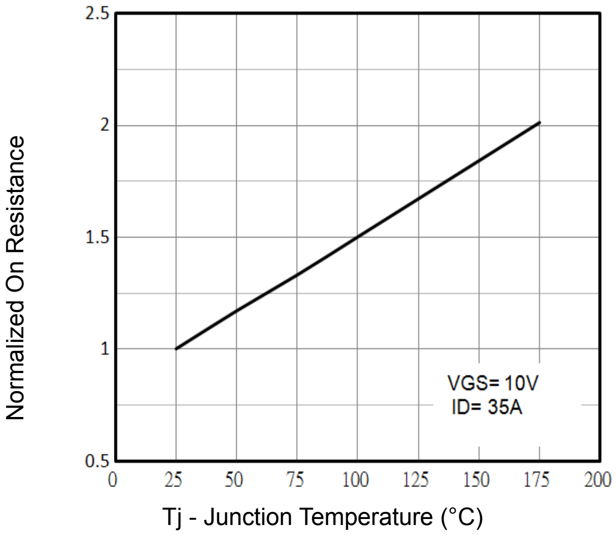


Fig4. Normalized On-Resistance Vs. Tj

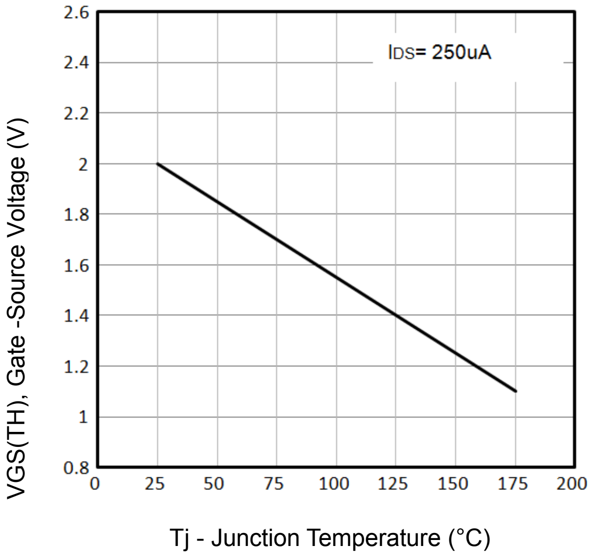


Fig5. $V_{GS(TH)}$ Gate -Source Voltage Vs.Tj

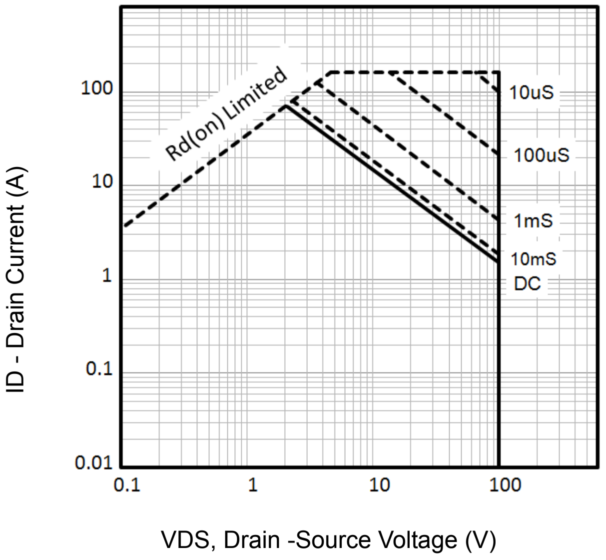


Fig6. Maximum Safe Operating Area

Typical Characteristics

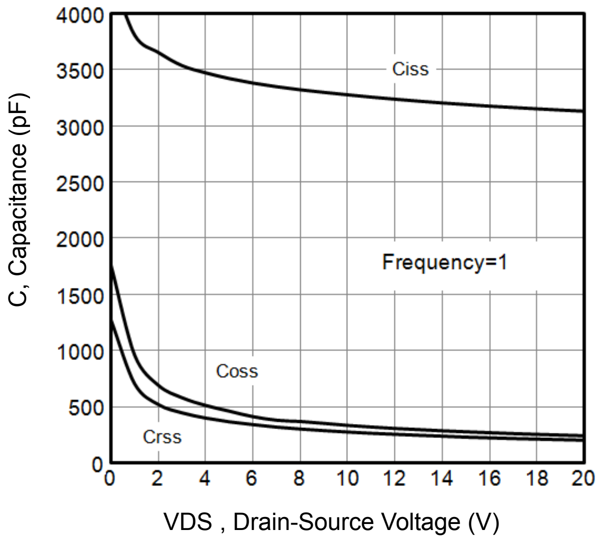


Fig7. Typical Capacitance Vs.Drain-Source Voltage

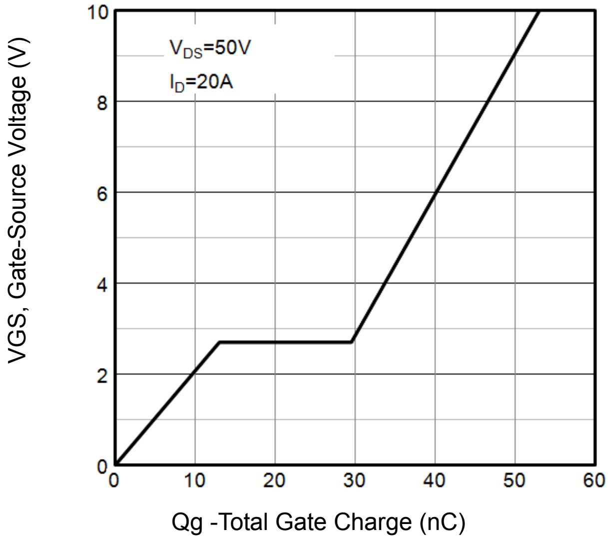


Fig8. Typical Gate Charge Vs.Gate-Source Voltage

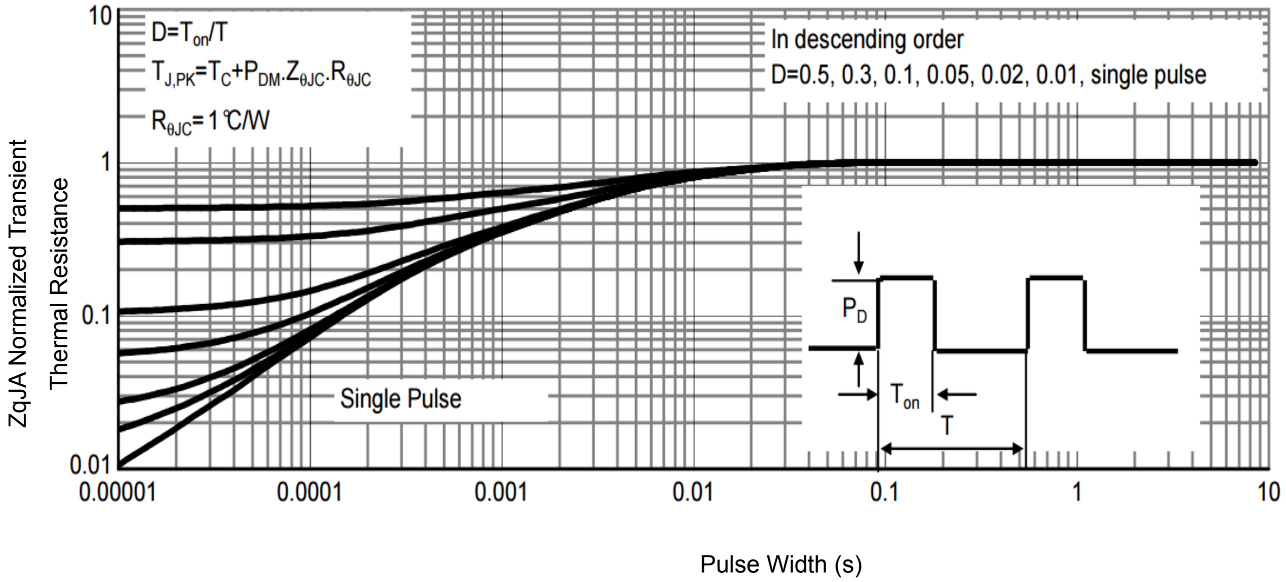


Fig9. Normalized Maximum Transient Thermal Impedance

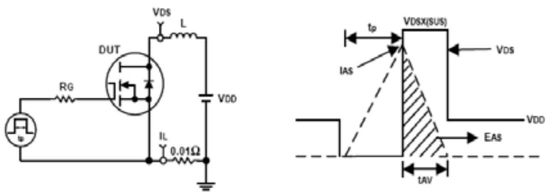


Fig10. Unclamped Inductive Test Circuit and waveforms

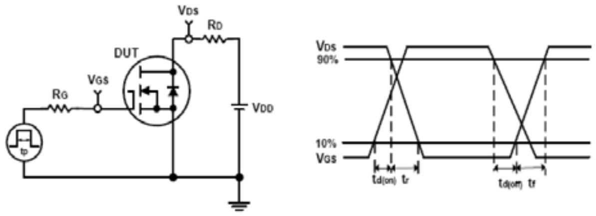
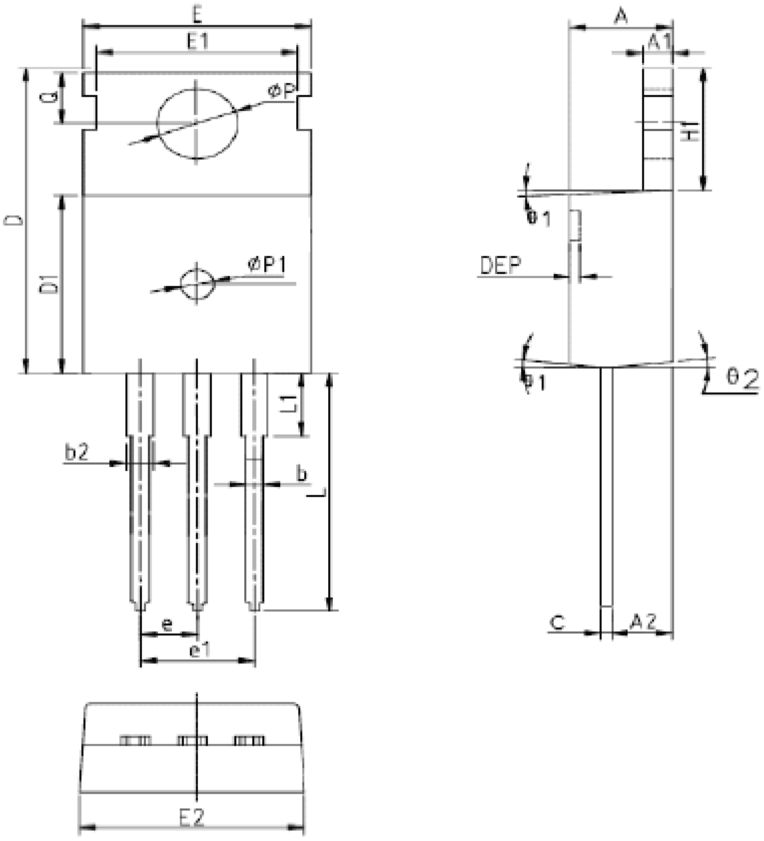


Fig11. Switching Time Test Circuit and waveforms

TO-220AB Package Outline



SYMBOL	MM			INCH			SYMBOL	MM			INCH		
	MIN	NOM	MAX	MIN	NOM	MAX		MIN	NOM	MAX	MIN	NOM	MAX
A	4.40	4.57	4.70	0.173	0.180	0.185	Øp1	1.40	1.50	1.60	0.055	0.059	0.063
A1	1.27	1.30	1.33	0.050	0.051	0.052	e	2.54BSC			0.1BSC		
A2	2.35	2.40	2.50	0.093	0.094	0.098	e1	5.08BSC			0.2BSC		
b	0.77	-	0.90	0.030	-	0.035	H1	6.40	6.50	6.60	0.252	0.256	0.260
b2	1.23	-	1.36	0.048	-	0.054	L	12.75	-	13.17	0.502	-	0.519
C	0.48	0.50	0.52	0.019	0.020	0.021	L1	-	-	3.95	-	-	0.156
D	15.40	15.60	15.80	0.606	0.614	0.622	L2	2.50REF.			0.098REF.		
D1	9.00	9.10	9.20	0.354	0.358	0.362	Øp	3.57	3.60	3.63	0.141	0.142	0.143
DEP	0.05	0.10	0.20	0.002	0.004	0.008	Q	2.73	2.80	2.87	0.107	0.110	0.113
E	9.70	9.90	10.10	0.382	0.389	0.398	θ 1	5°	7°	9°	5°	7°	9°
E1	-	8.70	-	-	0.343	-	θ 2	1°	3°	5°	1°	3°	5°
E2	9.80	10.00	10.20	0.386	0.394	0.401							

Customer Service

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