Vanguard
Semiconductor

VS3622DE

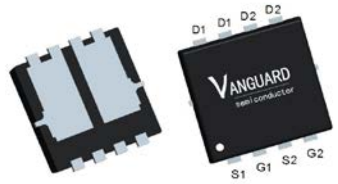
30V/35A Dual N-Channel Advanced Power MOSFET

Features

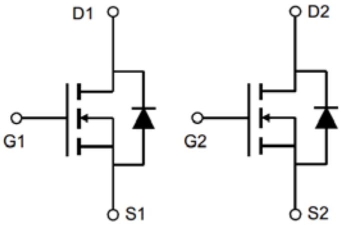
- Dual N-Channel，5V Logic Level Control
- Enhancement mode
- Low on-resistance $R_{DS(on)}$ @ V_{GS}=4.5 V
- Fast Switching
- 100% Avalanche Tested
- Pb-free lead plating; RoHS compliant

V_{DS}	30	V
$R_{DS(on),TYP}$@ V_{GS}=10 V	10	mΩ
$R_{DS(on),TYP}$@ V_{GS}=4.5 V	14	mΩ
I_D	35	A

PDFN3333



Pb-Free RoHS HF Halogen-Free



Part ID	Package Type	Marking	Tape and reel information
VS3622DE	PDFN3333	3622DE	5000pcs/Reel

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

Symbol	Parameter		Rating	Unit
$V_{(BR)DSS}$	Drain-Source breakdown voltage		30	V
I_S	Diode continuous forward current	T_C=25°C	35	A
I_D	Continuous drain current @V_{GS}=10V	T_C=25°C	35	A
		T_C=100°C	22	A
I_{DM}	Pulse drain current tested ①	T_C=25°C	140	A
EAS	Avalanche energy, single pulsed ②		16	mJ
P_D	Maximum power dissipation	T_C=25°C	20	W
V_{GS}	Gate-Source voltage		±20	V
T_{STG}	Storage temperature range		-55 to 150	°C

Thermal Characteristics

Symbol	Parameter	Typical	Unit
$R_{\theta JC}$	Thermal Resistance-Junction to Case	6.2	°C/W
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient	45	°C/W

Typical Electrical Characteristics

Symbol	Parameter	Condition	Min.	Typ.	Max.	Unit
Static Electrical Characteristics @ T_J = 25°C (unless otherwise stated)						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=250μA	30	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current(Tc=25℃)	V_{DS}=30V,V_{GS}=0V	--	--	1	μA
	Zero Gate Voltage Drain Current(Tc=125℃)	V_{DS}=30V,V_{GS}=0V	--	--	100	μA
I_{GSS}	Gate-Body Leakage Current	V_{GS}=±20V,V_{DS}=0V	--	--	±100	nA
$V_{GS(TH)}$	Gate Threshold Voltage	V_{DS}=V_{GS},I_D=250μA	1.3	1.9	2.4	V
$R_{DS(ON)}$	Drain-Source On-State Resistance ③	V_{GS}=10V, I_D=20A	--	10	13	mΩ
$R_{DS(ON)}$	Drain-Source On-State Resistance ③	V_{GS}=4.5V, I_D=10A	--	14	18	mΩ
Dynamic Electrical Characteristics @ T_J = 25°C (unless otherwise stated)						
C_{iss}	Input Capacitance	V_{DS}=15V,V_{GS}=0V, f=1MHz	800	880	950	pF
C_{oss}	Output Capacitance		120	140	160	pF
C_{rss}	Reverse Transfer Capacitance		90	110	130	pF
R_g	Gate Resistance	f=1MHz	--	3.5	--	Ω
Q_g	Total Gate Charge	V_{DS}=15V,I_D=20A, V_{GS}=10V	--	19	--	nC
Q_{gs}	Gate-Source Charge		--	4.3	--	nC
Q_{gd}	Gate-Drain Charge		--	6.5	--	nC
Switching Characteristics						
$t_{d(on)}$	Turn-on Delay Time	V_{DD}=15V, I_D=20A, R_G=3Ω, V_{GS}=10V	--	6	--	nS
t_r	Turn-on Rise Time		--	5	--	nS
$t_{d(off)}$	Turn-Off Delay Time		--	25	--	nS
t_f	Turn-Off Fall Time		--	7	--	nS
Source- Drain Diode Characteristics@ T_J = 25°C (unless otherwise stated)						
V_{SD}	Forward on voltage	I_{SD}=20A,V_{GS}=0V	--	0.9	1.2	V
t_{rr}	Reverse Recovery Time	T_j=25℃,I_{sd}=20A, V_{GS}=0V di/dt=500A/μs	--	7	--	nS
Q_{rr}	Reverse Recovery Charge			6.3		nC

NOTE:

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

② Limited by T_{Jmax}, starting T_J = 25°C, L = 0.5mH,R_G = 25Ω, I_{AS} = 8A, V_{GS} =10V. Part not recommended for use above this value

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

Typical Characteristics

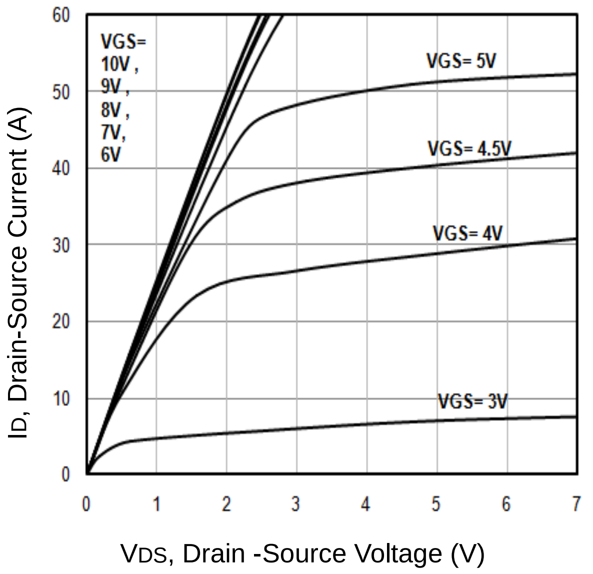


Fig1. Typical Output Characteristics

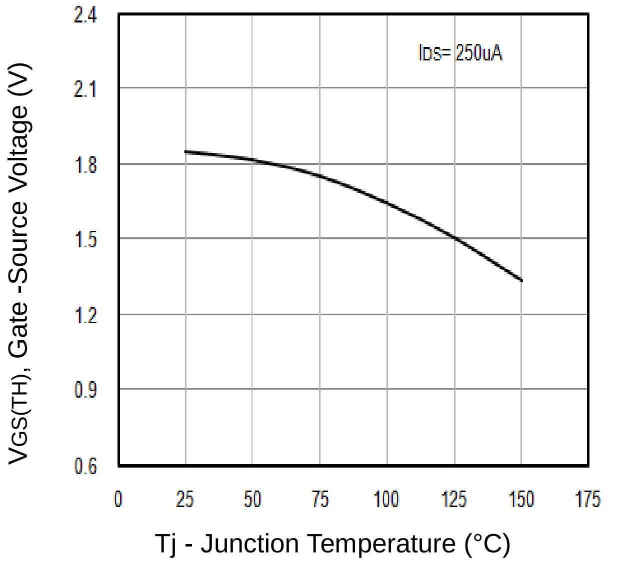


Fig2. Threshold Voltage Vs. Temperature

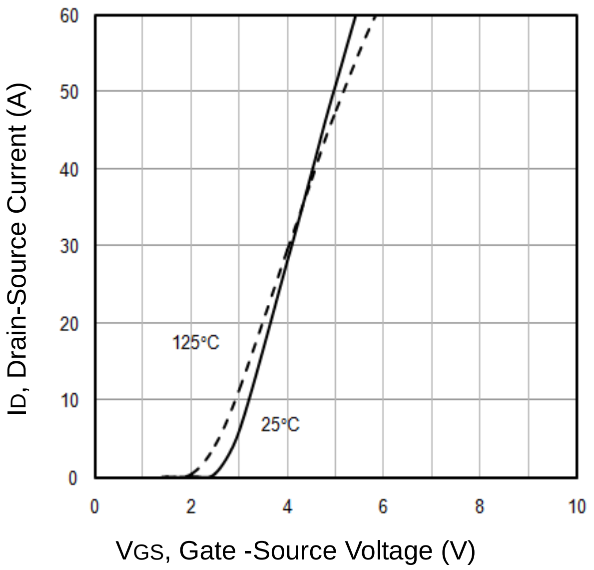


Fig3. Typical Transfer Characteristics

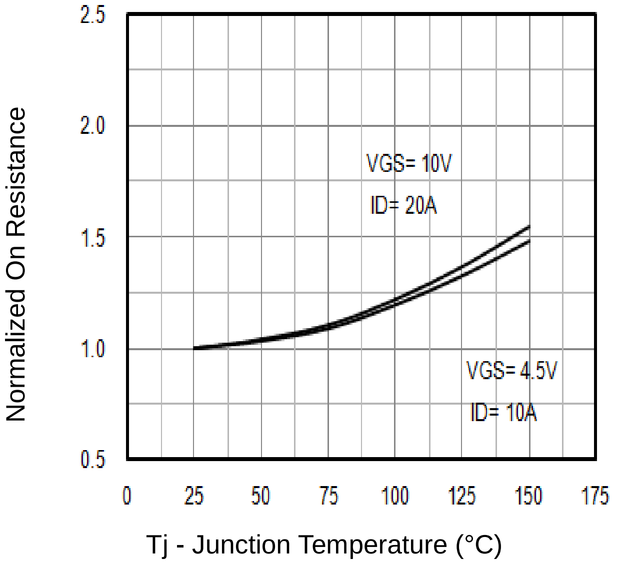


Fig4. Normalized On-Resistance Vs. Temperature

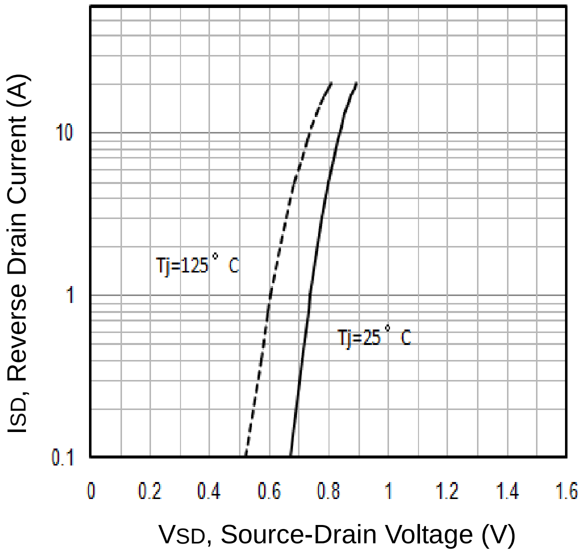


Fig5. Typical Source-Drain Diode Forward Voltage

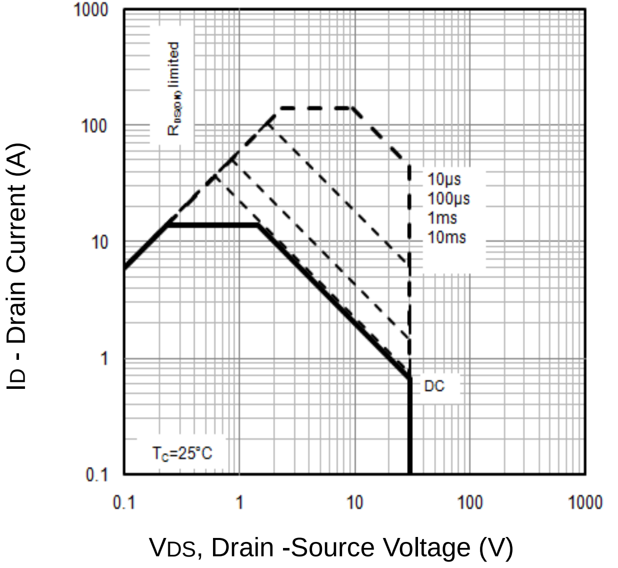


Fig6. Maximum Safe Operating Area

Typical Characteristics

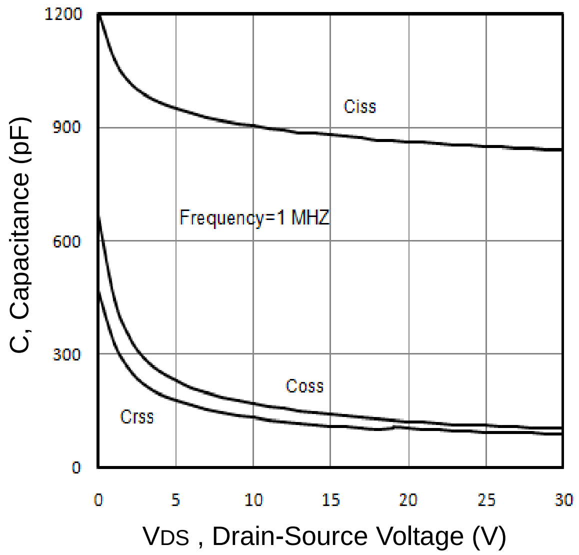


Fig7. Typical Capacitance Vs.Drain-Source Voltage

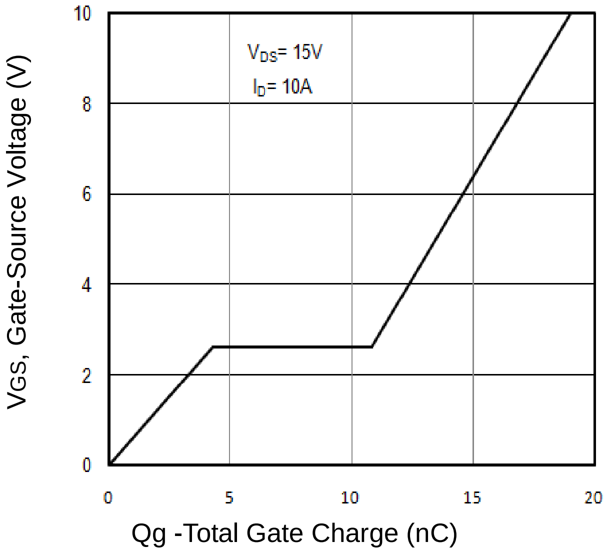


Fig8. Typical Gate Charge Vs.Gate-Source Voltage

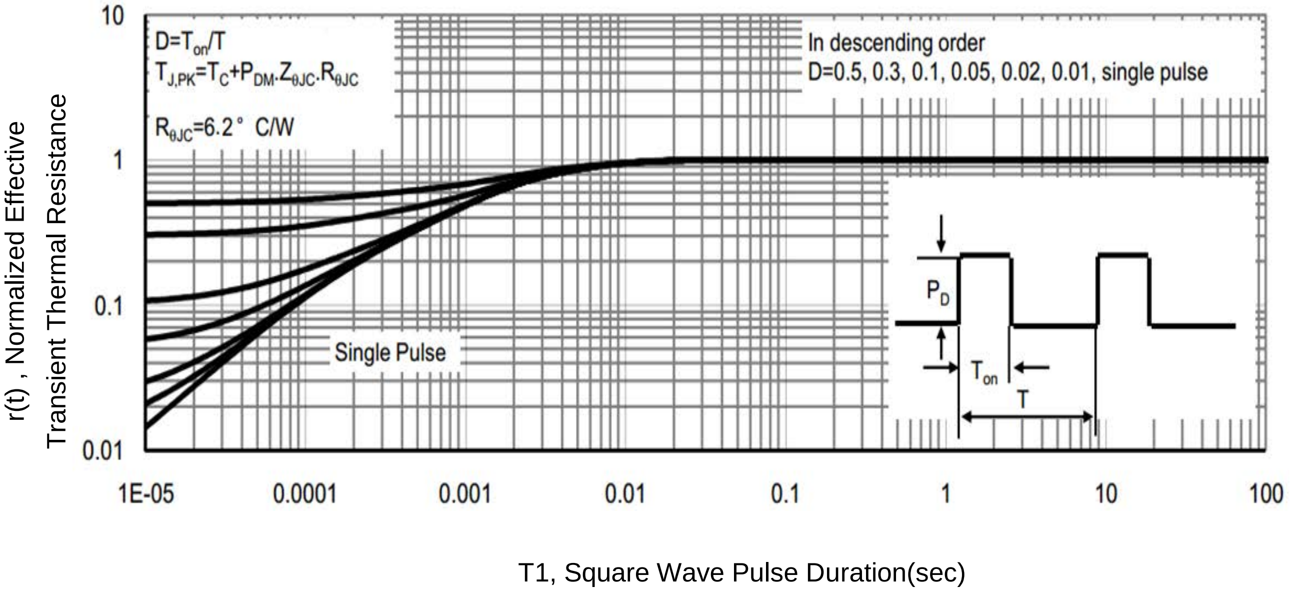


Fig9. T1 ,Transient Thermal Response Curve

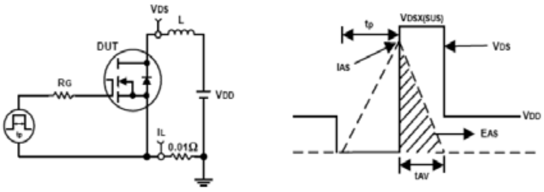


Fig10. Unclamped Inductive Test Circuit and waveforms

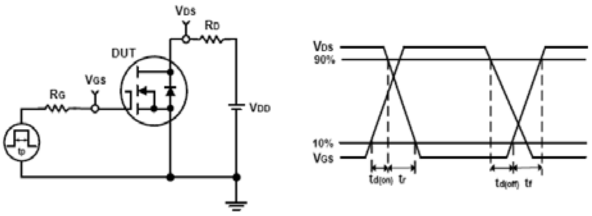
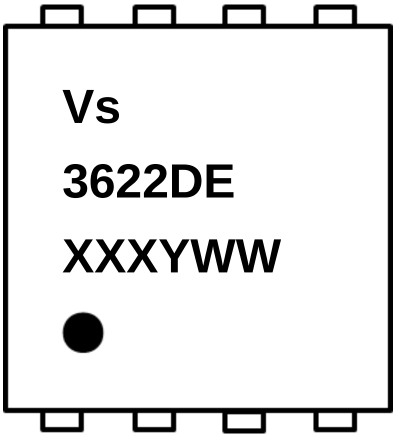


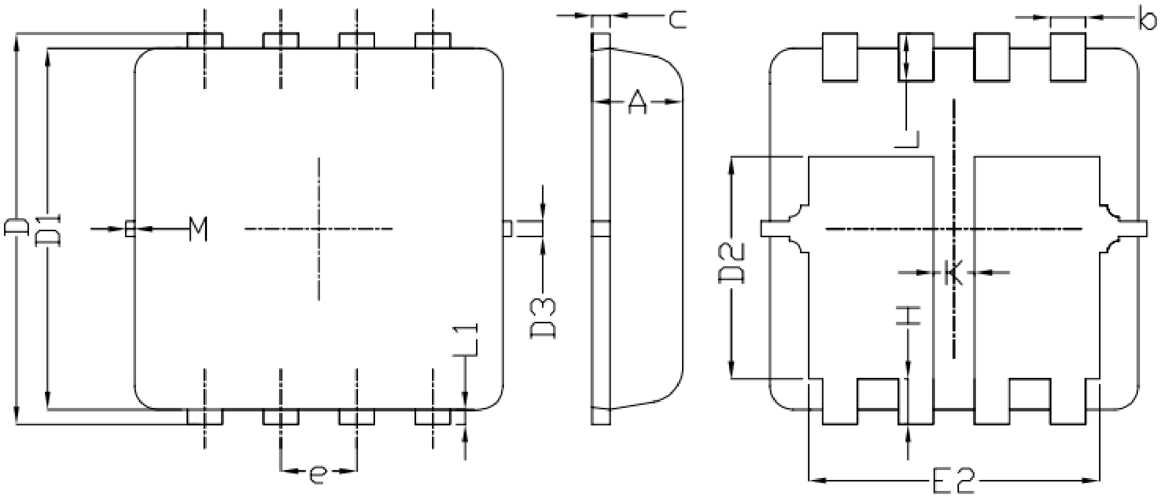
Fig11. Switching Time Test Circuit and waveforms

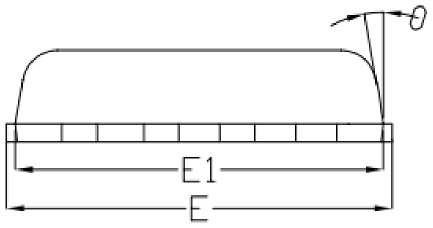
Marking Information

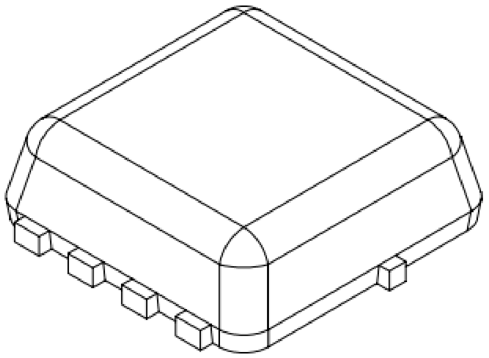


1st line：Vanguard Code（Vs）
2nd line：Part Number（3622DE）
3rd line：Date code （XXXYWW）
XXX： Wafer Lot Number Code , code changed with Lot Number
Y： Year Code (e.g. H=2020, J=2021, K=2022, L=2023, etc)
WW： Week Code (01 to 53)

Dual PDFN3333 Package Outline Data







Symbol	Dimensions (unit: mm)		
	Min	Typ	Max
A	0.70	0.75	0.80
b	0.25	0.30	0.35
c	0.10	0.15	0.25
D	3.25	3.35	3.45
D1	3.00	3.10	3.20
D2	1.78	1.88	1.98
D3	--	0.13	--
E	3.20	3.30	3.40
E1	3.00	3.15	3.20
E2	2.39	2.49	2.59
e	0.65 BSC		
H	0.30	0.39	0.50
L	0.30	0.40	0.50
L1	--	0.13	--
K	0.30	--	--
θ	--	10°	12°
M	*	*	0.15
* Not Specified			

Notes:

1. Refer to JEDEC MO-240 variation CA.
2. Dimensions "D1" and "E1" do NOT include mold flash protrusions or gate burrs.
3. Dimensions "D1" and "E1" include interterminal flash or protrusion. Interterminal flash or protrusion shall not exceed 0.25mm per side.

Customer Service

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