Vanguard
Semiconductor

VS6888BTD

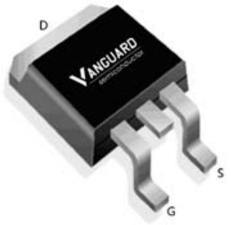
65V/88A N-Channel Advanced Power MOSFET

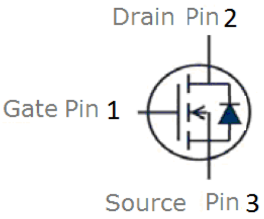
V_{DS}	65	V
$R_{DS(on),TYP}$@ V_{GS}=10V	5.3	mΩ
I_D	88	A

Features

- N-Channel，10V Logic Level Control
- Enhancement mode
- Very low on-resistance $R_{DS(on)}$ @ V_{GS}=10V
- VitoMOS® Technology
- 100% Avalanche test
- Pb-free lead plating; RoHS compliant

TO-263





Part ID	Package Type	Marking	Tape and reel information
VS6888BTD	TO-263	6888BTD	800pcs/Reel

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

Symbol	Parameter		Rating	Unit
$V_{(BR)DSS}$	Drain-Source breakdown voltage		65	V
I_S	Diode continuous forward current	T_C =25°C	88	A
I_D	Continuous drain current@VGS=10V	T_C =25°C	88	A
		T_C =100°C	56	A
I_{DM}	Pulse drain current tested ①	T_C =25°C	320	A
P_D	Maximum power dissipation	T_C =25°C	125	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	1.2	°C/W
$R_{\theta JA}$	Thermal Resistance Junction-Ambient	40	°C/W
Drain-Source Avalanche Ratings			
EAS	Avalanche Energy, Single Pulsed ②	400	mJ

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	65	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=65V,V_{GS}=0V	--	--	1	μA
	Zero Gate Voltage Drain Current(T_j=125℃)	V_{DS}=65V,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	2.0	3.0	4.0	V
$R_{DS(ON)}$	Drain-Source On-State Resistance③	V_{GS}=10V, I_D=40A	--	5.3	7.0	mΩ
Dynamic Electrical Characteristics @ T_j = 25°C (unless otherwise stated)						
C_{iss}	Input Capacitance	V_{DS}=30V,V_{GS}=0V, f=1MHz	--	3720	--	pF
C_{oss}	Output Capacitance		--	340	--	pF
C_{rss}	Reverse Transfer Capacitance		--	190	--	pF
R_g	Gate Resistance	f=1MHz	--	1.8	--	Ω
Q_g	Total Gate Charge	V_{DS}=30V,I_D=20A, V_{GS}=10V	--	70	--	nC
Q_{gs}	Gate-Source Charge		--	17	--	nC
Q_{gd}	Gate-Drain Charge		--	21	--	nC
Switching Characteristics						
$t_{d(on)}$	Turn-on Delay Time	V_{DD}=30V, I_D=20A, R_G=6.8Ω, V_{GS}=10V	--	22	--	nS
t_r	Turn-on Rise Time		--	38	--	nS
$t_{d(off)}$	Turn-Off Delay Time		--	49	--	nS
t_f	Turn-Off Fall Time		--	26	--	nS
Source- Drain Diode Characteristics@ T_j = 25°C (unless otherwise stated)						
V_{SD}	Forward on voltage	I_{SD}=40A,V_{GS}=0V	--	0.86	1.20	V
t_{rr}	Reverse Recovery Time	T_j=25℃,I_{sd}=30A, V_{GS}=0V di/dt=500A/μs	--	66	--	nS
Q_{rr}	Reverse Recovery Charge			108		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} = 40A,V_{GS} =10V. Part not recommended for use above this value

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

Typical Characteristics

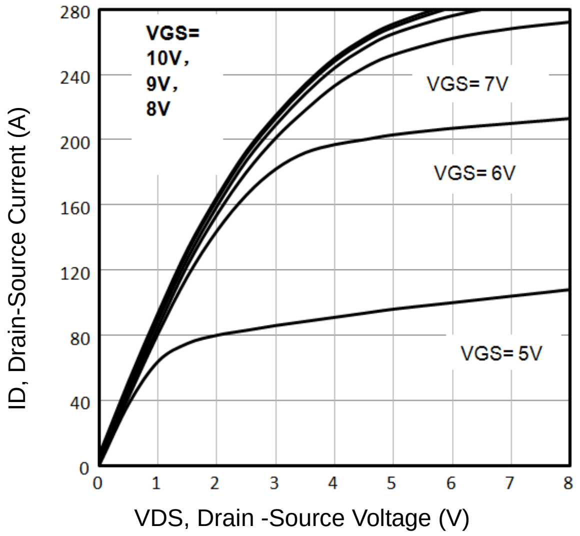


Fig1. Typical Output Characteristics

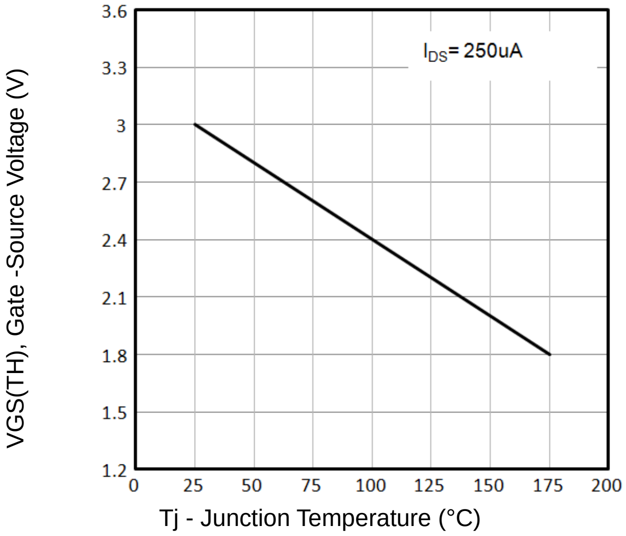


Fig2. $V_{GS(TH)}$ Gate -Source Voltage Vs.Tj

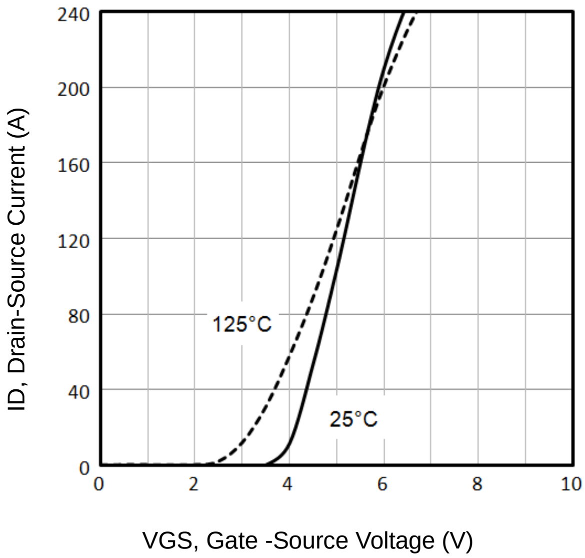


Fig3. Typical Transfer Characteristics

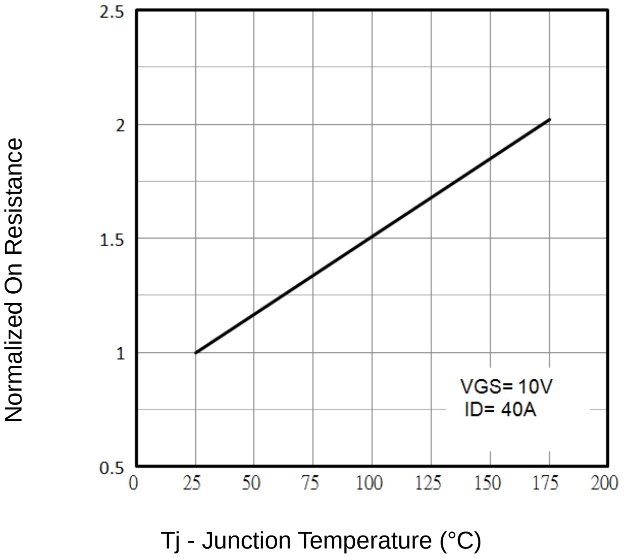


Fig4. Normalized On-Resistance Vs. Tj

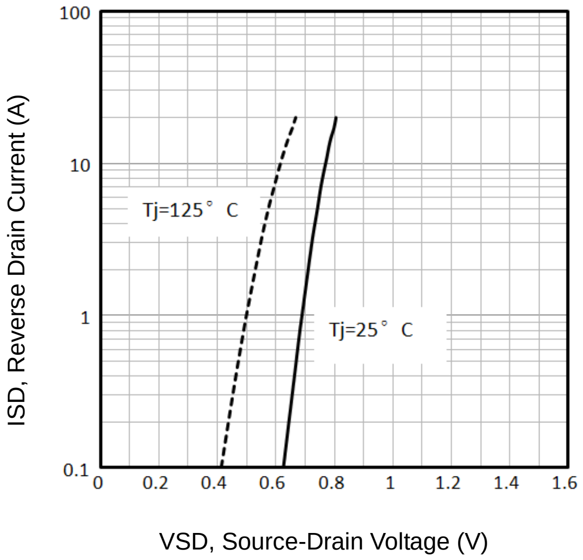


Fig5. Typical Source-Drain Diode Forward Voltage

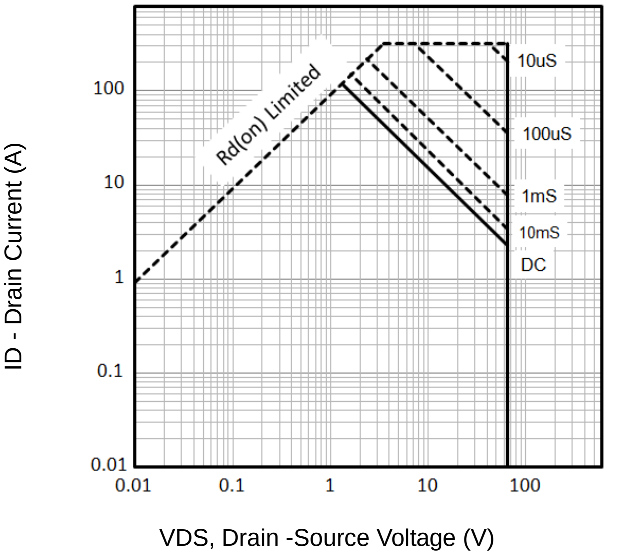


Fig6. Maximum Safe Operating Area

Typical Characteristics

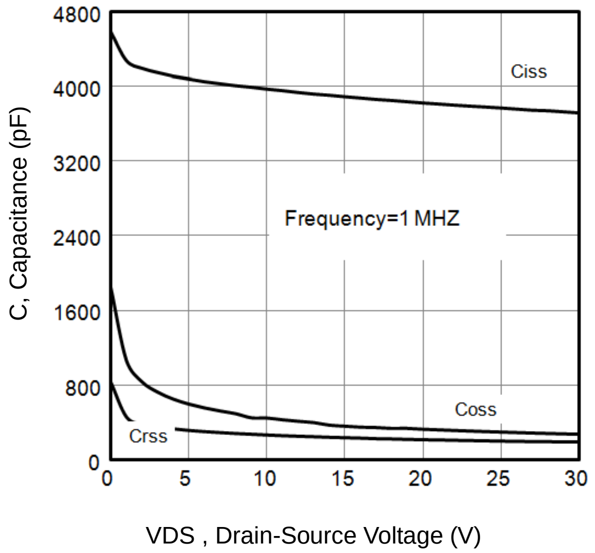


Fig7. Typical Capacitance Vs.Drain-Source Voltage

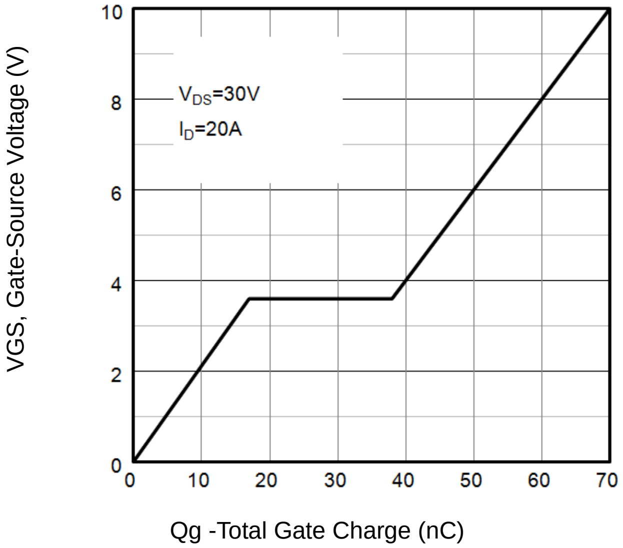


Fig8. Typical Gate Charge Vs.Gate-Source Voltage

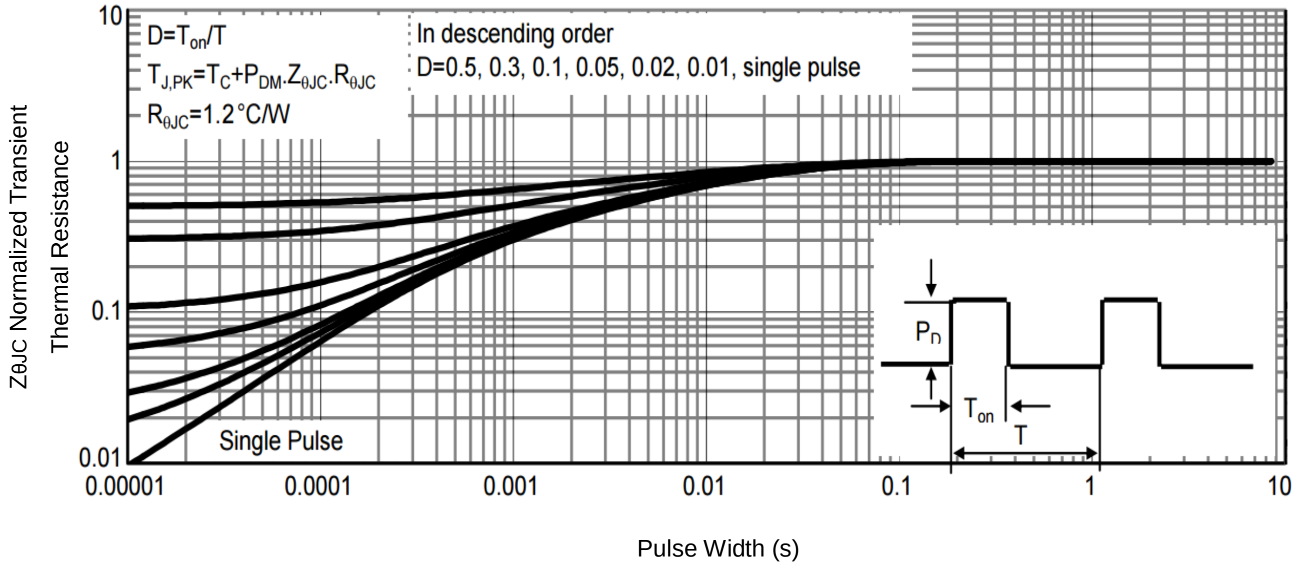


Fig9. Normalized Maximum Transient Thermal Impedance

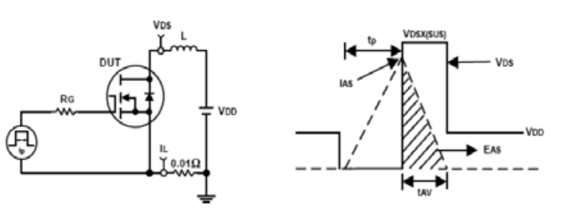


Fig10. Unclamped Inductive Test Circuit and waveforms

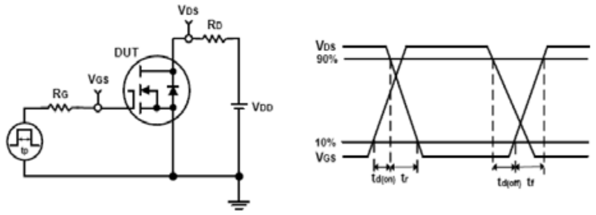
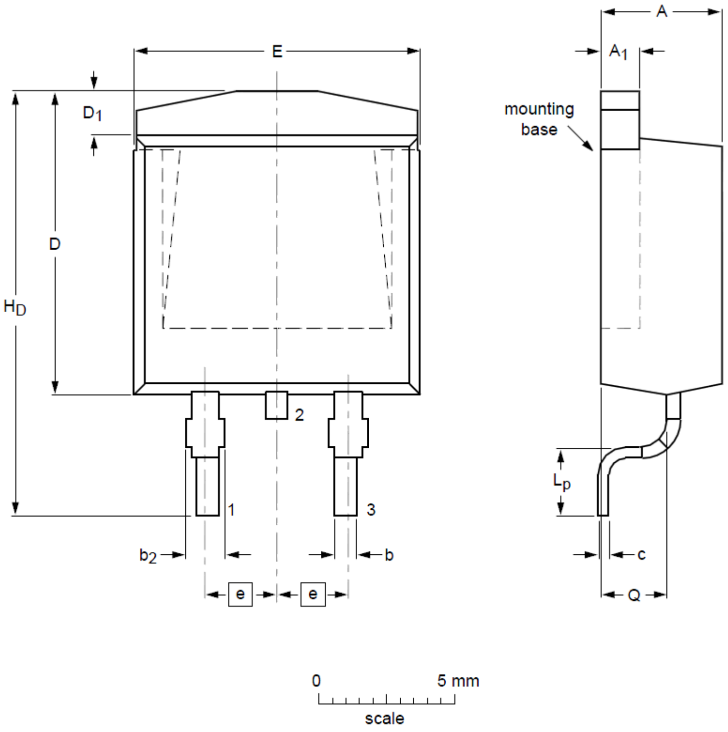


Fig11. Switching Time Test Circuit and waveforms

TO-263 Package Outline Data



DIMENSIONS (unit : mm)

Symbol	Min	Typ	Max	Symbol	Min	Typ	Max
A	4.40	4. 55	4.70	**A_1**	1.25	1. 30	1.40
b	0.60	0. 76	0.85	**b_2**	1.05	1. 30	1.45
c	0.35	0. 45	0.60	**D**	9.80	10. 20	10.50
D_1	1.20	1. 51	1.60	**E**	9.70	10.10	10.30
e	--	2.54	--	**H_D**	14.80	15.45	15.80
L_P	2.10	2.40	2.90	**Q**	2.20	2.50	2.60

Customer Service

Sales and Service:

sales@vgsemi.com

Vanguard Semiconductor CO., LTD

TEL: (86-755) -26902410

FAX: (86-755) -26907027

WEB: **www.vgsemi.com**