HSH0084A

N-Ch 100V Fast Switching MOSFETs

Features

- 100% EAS Guaranteed
- Green Device Available
- Super Low RDS$_{(ON)}$
- Advanced high cell density SGT MOS Technology

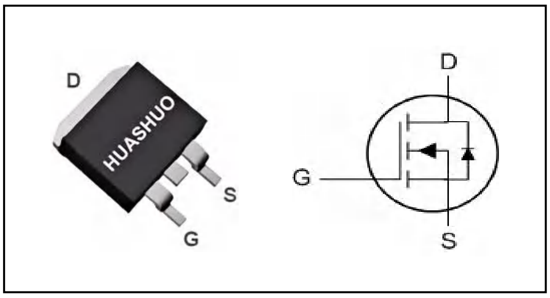
Product Summary

V_{DS}	100	V
$R_{DS(ON),typ}$	3	mΩ
I_D	180	A

Applications

- MOTOR Driver
- BMS
- High frequency switching and synchronous rectification

TO-263 Pin Configuration



Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	100	V
V_{GS}	Gate-Source Voltage	±20	V
I_D@T_C=25˚C	Continuous Drain Current, V_{GS} @ 10V^{1,6}	180	A
I_D@T_C=100˚C	Continuous Drain Current, V_{GS} @ 10V^{1,6}	120	A
I_{DM}	Pulsed Drain Current^2	540	A
EAS	Single Pulse Avalanche Energy^3	460	mJ
I_{AS}	Avalanche Current	62	A
P_D@T_C=25˚C	Total Power Dissipation^4	260	W
T_{STG}	Storage Temperature Range	-55 to 150	˚C
T_J	Operating Junction Temperature Range	-55 to 150	˚C

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-Ambient ^{1}	---	55	˚C/W
$R_{\theta JC}$	Thermal Resistance Junction-Case^1	---	0.5	˚C/W

Electrical Characteristics (T_J=25 ℃, unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V , I_D=250uA	100	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance[2]	V_{GS}=10V , I_D=30A	---	3.0	3.5	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =250uA	2.0	3.0	4.0	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=100V , V_{GS}=0V , T_J=25℃	---	---	1	uA
		V_{DS}=100V , V_{GS}=0V , T_J=125℃	---	---	10	
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±20V , V_{DS}=0V	---	---	±100	nA
R_g	Gate Resistance	V_{DS}=0V , V_{GS}=0V , f=1MHz	---	1.5	---	Ω
Qg	Total Gate Charge (10V)	VDS=50V , VGS=10V , ID=20A	---	112	---	nC
Qgs	Gate-Source Charge		---	25	---	
Qgd	Gate-Drain Charge		---	23	---	
Td(on)	Turn-On Delay Time	VDD=50V , VGS=10V , RG=6.0Ω, ID=20A	---	35	---	ns
Tr	Rise Time		---	44	---	
Td(off)	Turn-Off Delay Time		---	125	---	
Tf	Fall Time		---	65	---	
Ciss	Input Capacitance	VDS=50V , VGS=0V , f=1MHz	---	7425	---	pF
Coss	Output Capacitance		---	1621	---	
Crss	Reverse Transfer Capacitance		---	64	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current[1,5]	V_G=V_D=0V , Force Current	---	---	120	A
V_{SD}	Diode Forward Voltage[2]	V_{GS}=0V , I_S=20A , T_J=25℃	---	---	1.0	V
t_{rr}	Reverse Recovery Time	IF=20A , dI/dt=100A/µs , T_J=25℃	---	86	---	nS
Q_{rr}	Reverse Recovery Charge		---	181	---	nC

Note :

1.The data tested by surface mounted on a 1 inch^2 FR-4 board with 2OZ copper.

2.The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%

3.The EAS data shows Max. rating . The test condition is V_{DD}=50V,V_{GS}=10V,L=0.5mH,I_{AS}=62A

4.The power dissipation is limited by 150℃ junction temperature

5.The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.

6.Package limitation current.

Typical Characteristics

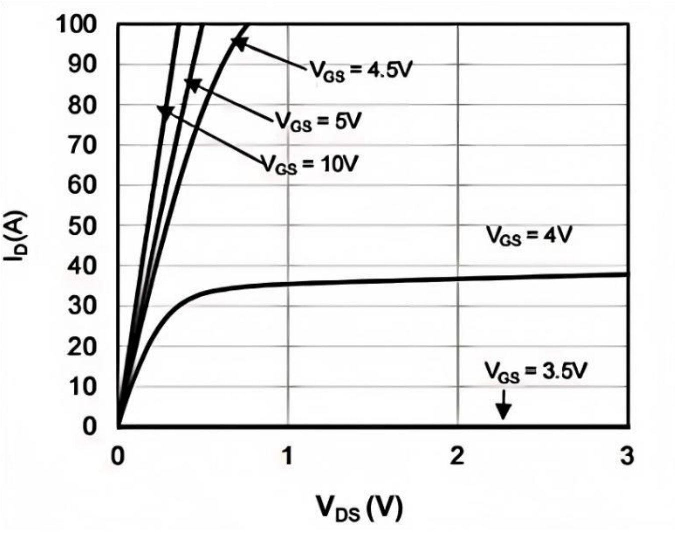


Fig.1 Typical Output Characteristics

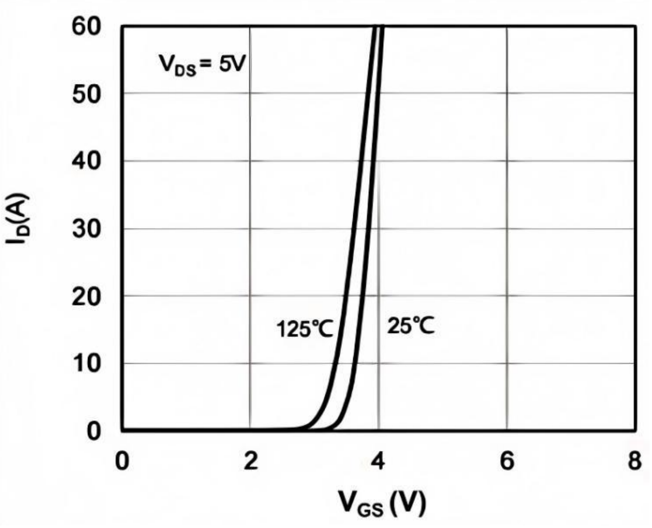


Fig.2 Transfer Characteristics

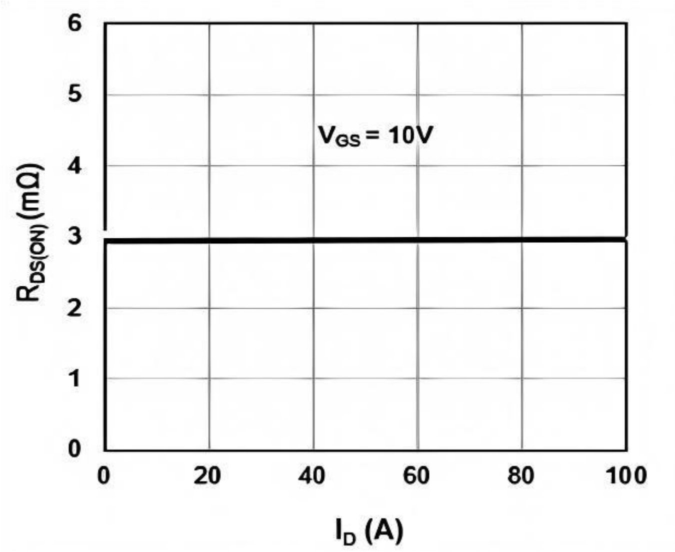


Fig.3 On-Resistance Variation vs Drain Current

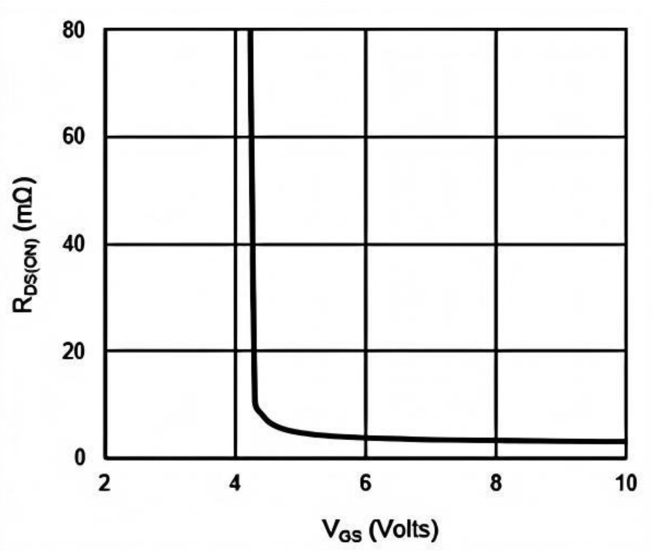


Fig.4 On-Resistance vs Gate to Source Voltage

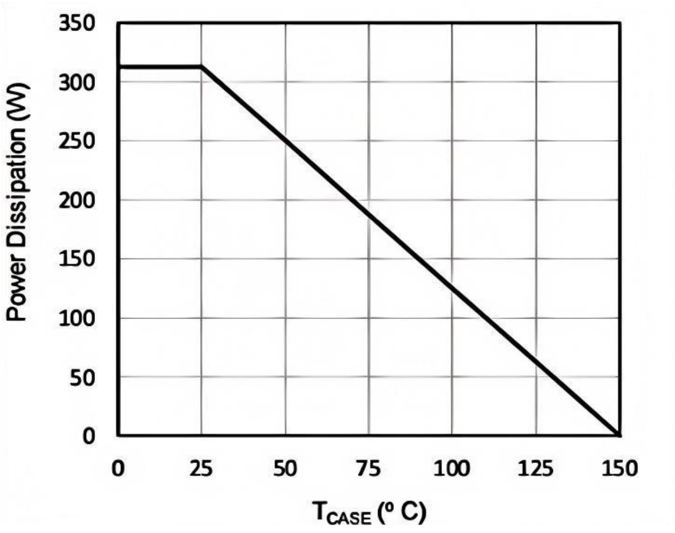


Fig.5 Power Dissipation

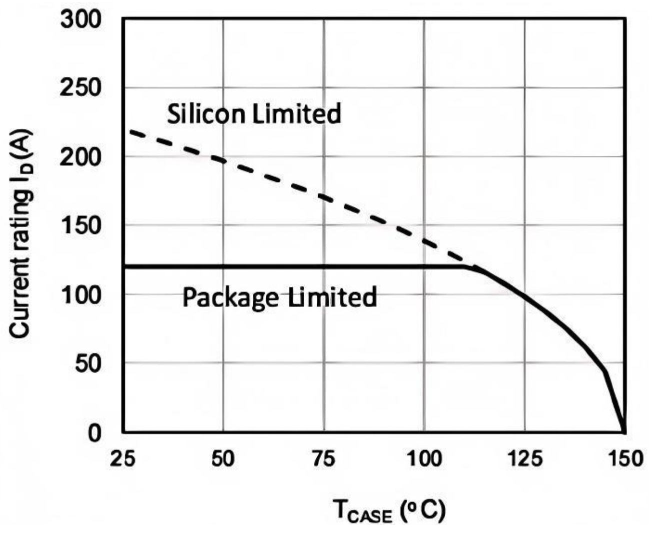


Fig.6 Drain Current Derating

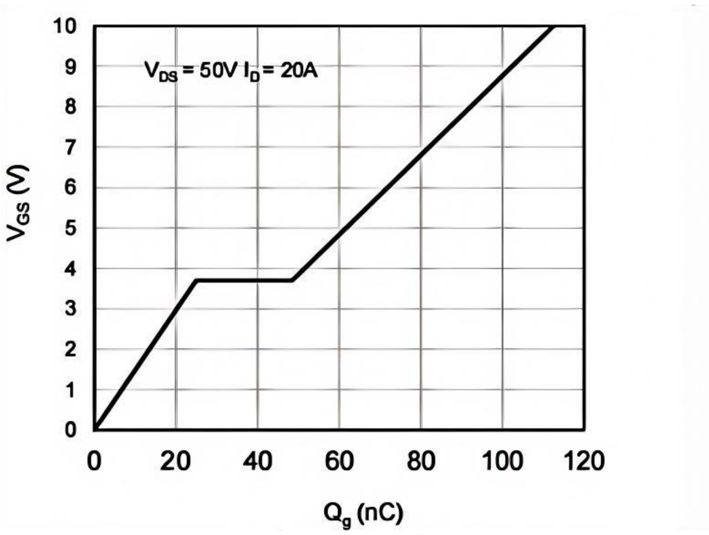


Fig.7 Gate Charge Waveforms

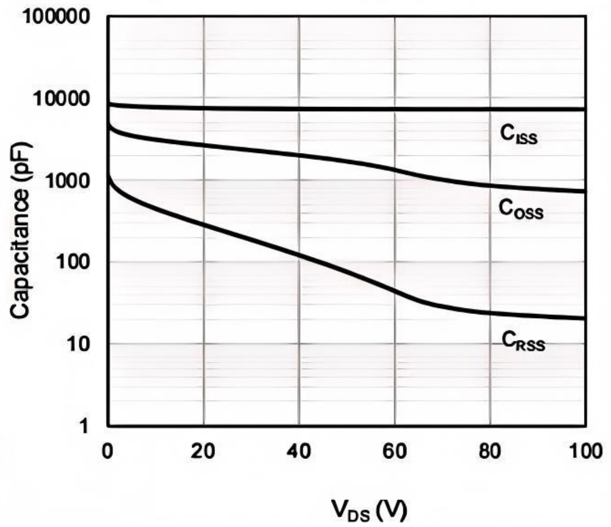


Fig.8 Capacitance

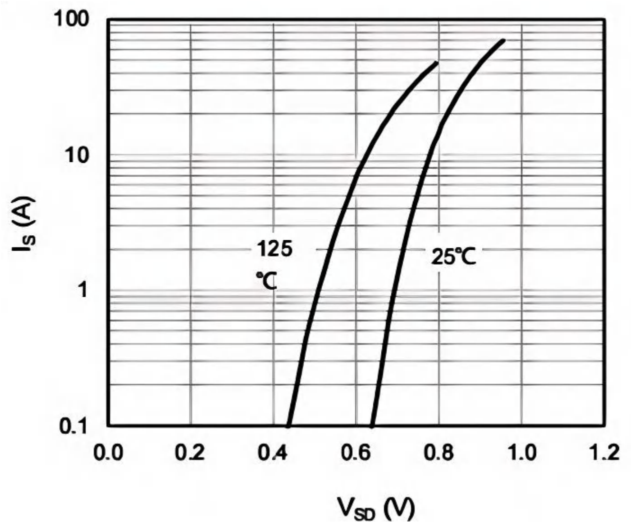


Fig.9 Body Diode Characteristics

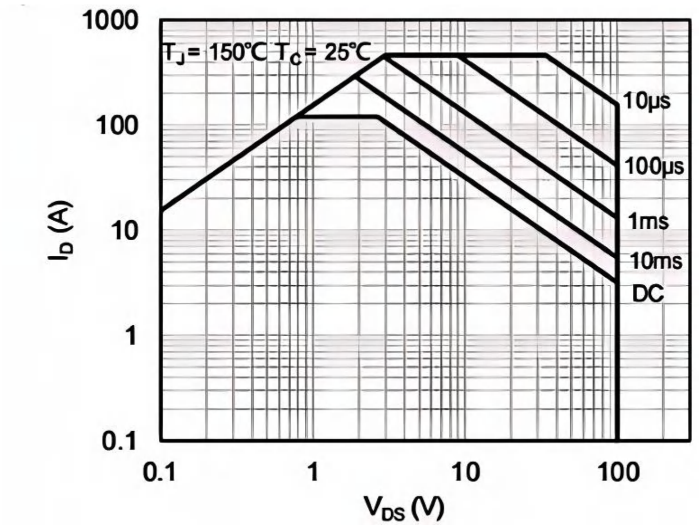


Fig.10 Maximum Safe Operating Area

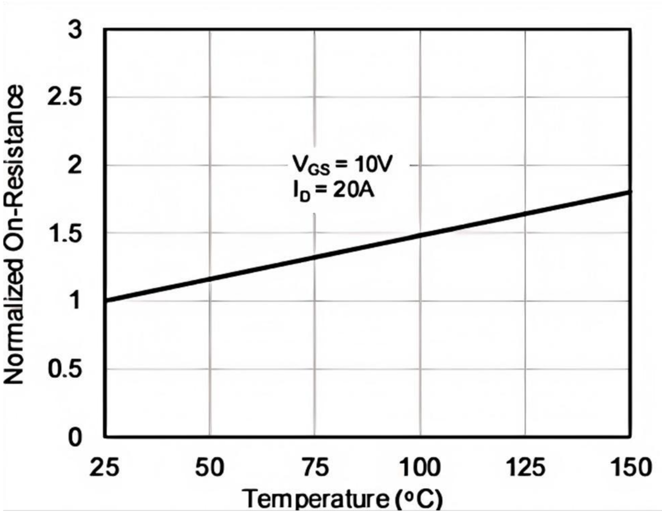


Fig.11 On-Resistance Variation vs Temperature

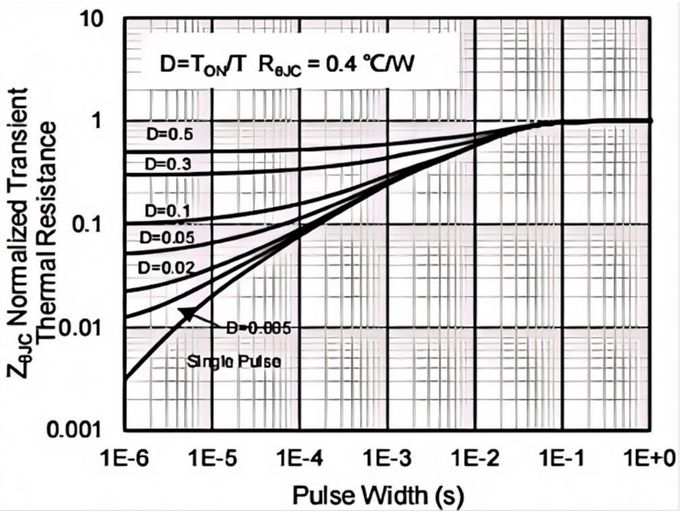
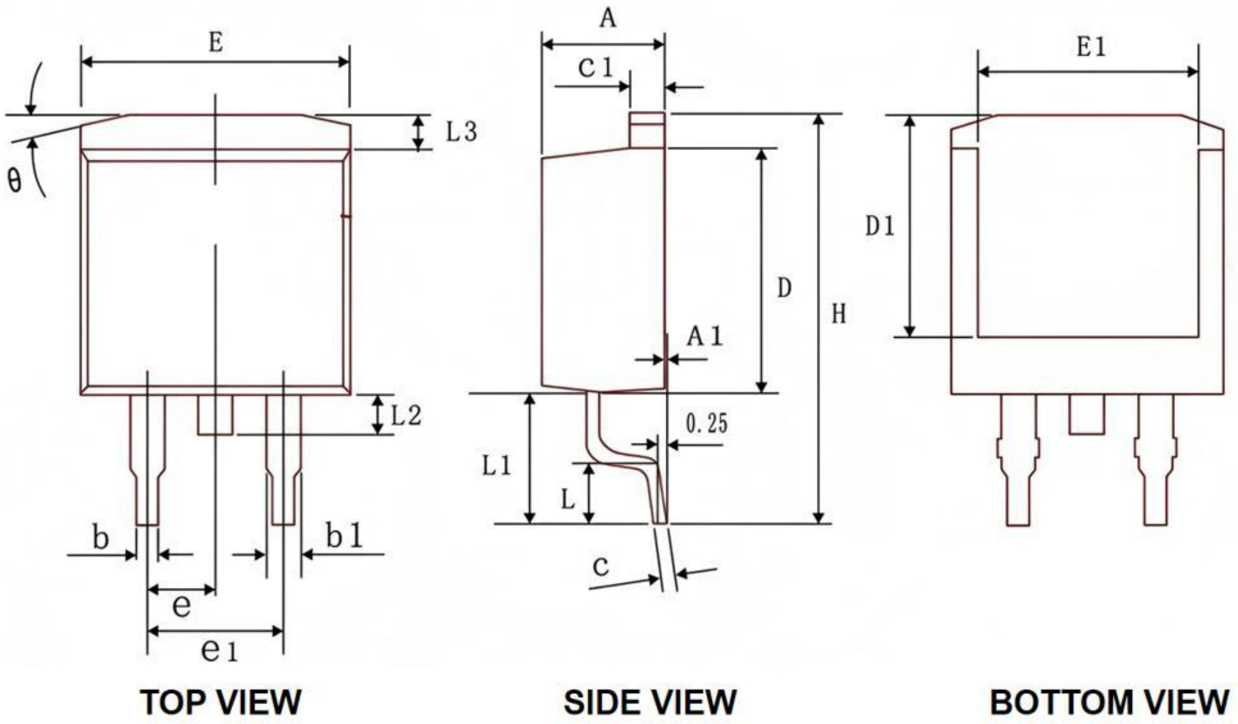


Fig.12 Transient Thermal Response Curve

Ordering Information

Part Number	Package code	Packaging
HSH0084A	TO-263	800/Tape&Reel

TO-263 Package Outline



COMMON DIMENSIONS(UNIT OF MEASURE - MM)

SYMBOL	MIN	NOM	MAX
A	4.37	4.57	4.77
A1	0.00	-	0.25
b	0.70	0.83	0.96
b1	1.00	1.24	1.47
C	0.35	0.45	0.55
C1	1.25	1.30	1.35
D	8.50	8.90	9.30
D1	7.50	8.00	8.50
H	14.7	15.20	15.7
E	9.80	10.08	10.4
E1	7.35	7.80	8.25
e1	4.93	5.08	5.23
L	2.00	2.30	2.60
L1	4.50	4.75	5.00
L2	1.30	1.53	1.75
L3	1.10	1.29	1.47
e	2.54 BSC		
θ	13°TYP		

HSH0084A Marking: