

Features

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

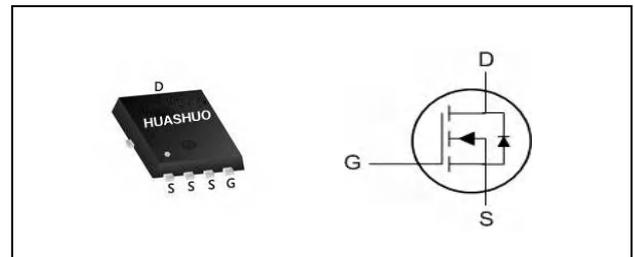
Applications

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

Product Summary

V_{DS}	100	V
$R_{DS(ON),typ}$	2.7	$m\Omega$
I_D	150	A

PRPAK5*6 Pin Configuration



Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	100	V
V_{GS}	Gate-Source Voltage	± 20	V
$I_D@T_C=25^\circ C$	Continuous Drain Current, $V_{GS} @ 10V^{1,6}$	150	A
$I_D@T_C=100^\circ C$	Continuous Drain Current, $V_{GS} @ 10V^{1,6}$	110	A
I_{DM}	Pulsed Drain Current ²	600	A
EAS	Single Pulse Avalanche Energy ³	732	mJ
I_{AS}	Avalanche Current	60	A
$P_D@T_C=25^\circ C$	Total Power Dissipation ⁴	220	W
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ C$
T_J	Operating Junction Temperature Range	-55 to 150	$^\circ C$

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-Ambient ¹	---	50	$^\circ C/W$
$R_{\theta JC}$	Thermal Resistance Junction-Case ¹	---	0.52	$^\circ C/W$

N-Ch 100V Fast Switching MOSFETs
Electrical Characteristics (T_J=25 °C, unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250μA	100	---	---	V
R _{DS(ON)}	Static Drain-Source On-Resistance ²	V _{GS} =10V, I _D =30A	---	2.7	3.2	mΩ
V _{GS(th)}	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D =250μA	2.0	3.0	4.0	V
I _{DSS}	Drain-Source Leakage Current	V _{DS} =100V, V _{GS} =0V, T _J =25°C	---	---	1	μA
		V _{DS} =100V, V _{GS} =0V, T _J =125°C	---	---	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
Q _g	Total Gate Charge (10V)	V _{DS} =50V, V _{GS} =10V, I _D =20A	---	112	---	nC
Q _{gs}	Gate-Source Charge		---	25	---	
Q _{gd}	Gate-Drain Charge		---	23	---	
T _{d(on)}	Turn-On Delay Time	V _{DD} =50V, V _{GS} =10V, R _G =6.0Ω, I _D =20A	---	35	---	ns
T _r	Rise Time		---	44	---	
T _{d(off)}	Turn-Off Delay Time		---	125	---	
T _f	Fall Time		---	65	---	
C _{iss}	Input Capacitance	V _{DS} =50V, V _{GS} =0V, f=1MHz	---	7425	---	pF
C _{oss}	Output Capacitance		---	1621	---	
C _{rss}	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 =50A, T _J =25°C	---	---	1.0	V
t _{rr}	Reverse Recovery Time	I _F =20A, di/dt=100A/μs,	---	86	---	nS
Q _{rr}	Reverse Recovery Charge	T _J =25°C	---	181	---	nC

Note :

- 1.The data tested by surface mounted on a 1 inch² 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}=25V, V_{GS}=10V, L=0.5mH, I_{AS}=60A
- 4.The power dissipation is limited by 150°C 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

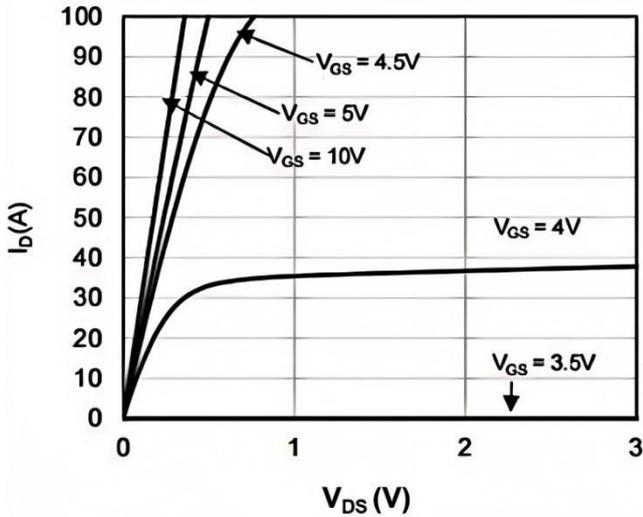


Fig.1 Typical Output Characteristics

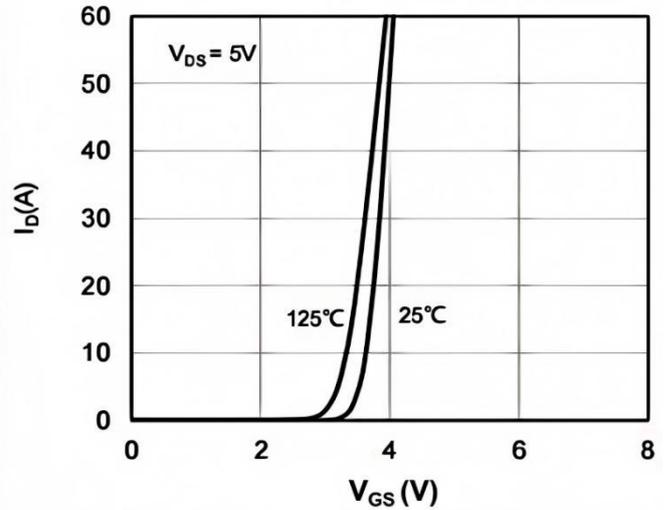


Fig.2 Transfer Characteristics

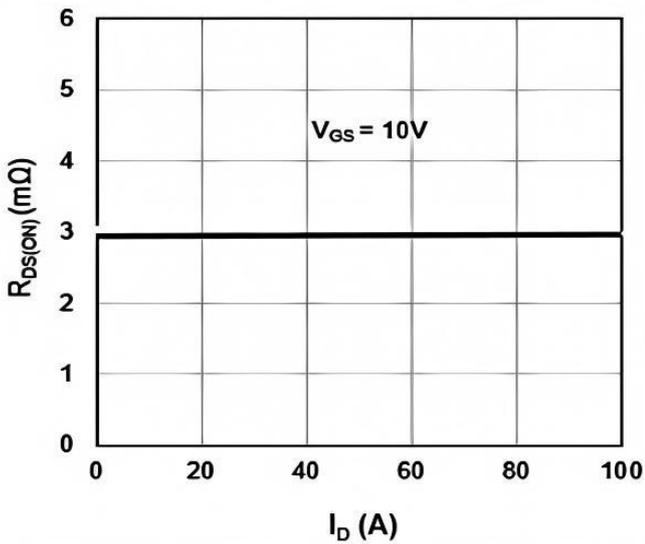


Fig.3 On-Resistance Variation vs Drain Current

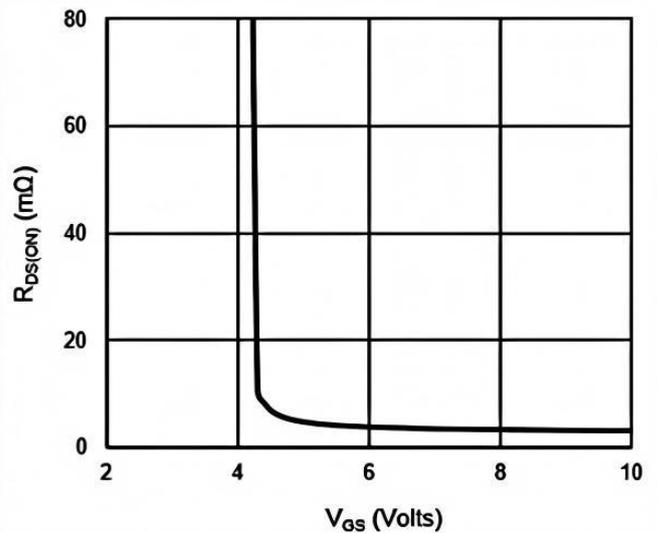


Fig.4 On-Resistance vs Gate to Source Voltage

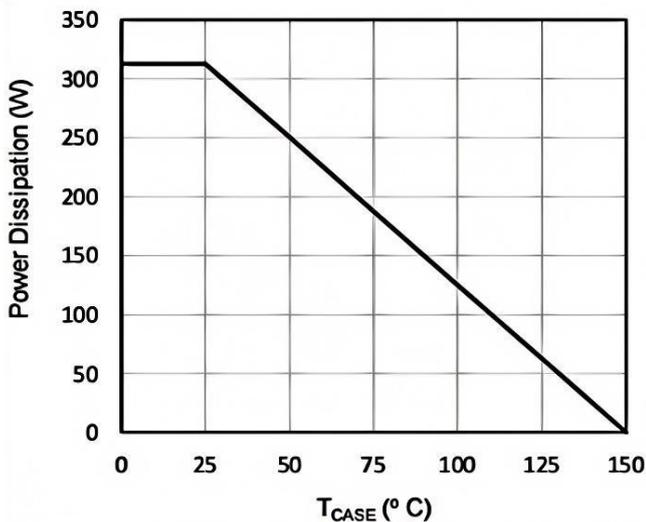


Fig.5 Power Dissipation

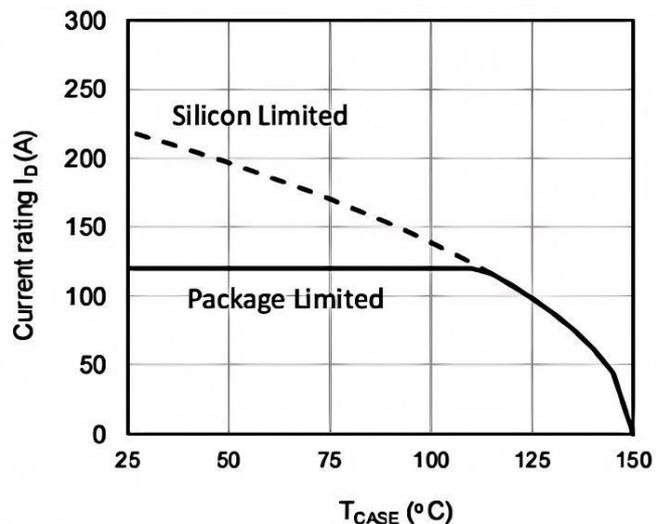


Fig.6 Drain Current Derating



N-Ch 100V Fast Switching MOSFETs

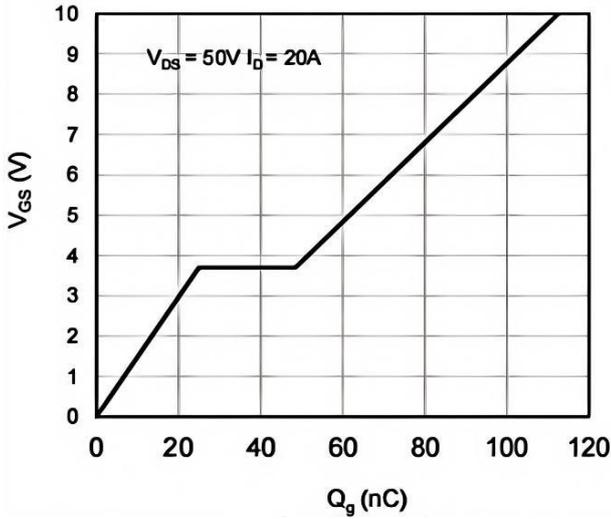


Fig.7 Gate Charge Waveforms

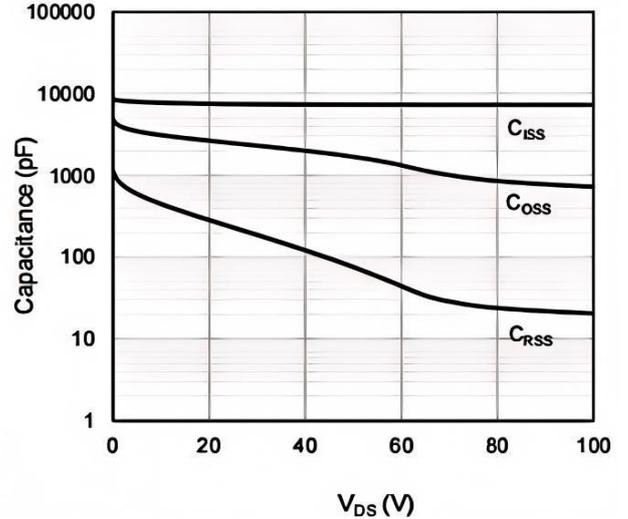


Fig.8 Capacitance

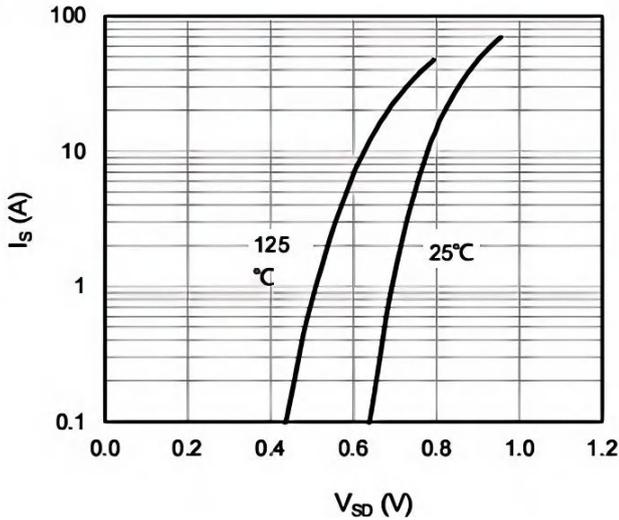


Fig.9 Body Diode Characteristics

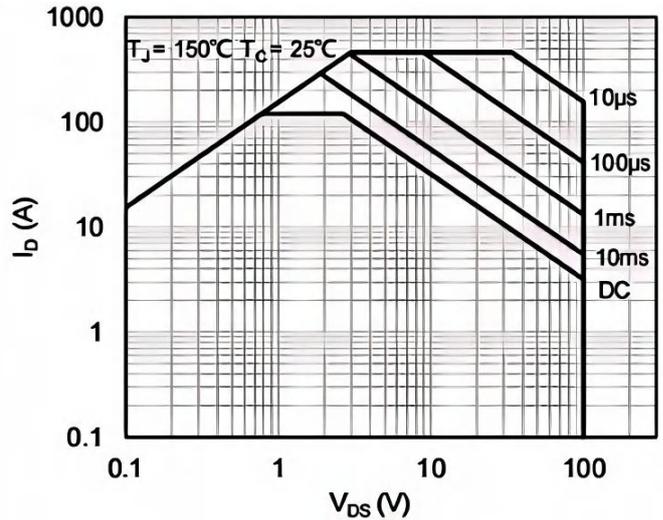


Fig.10 Maximum Safe Operating Area

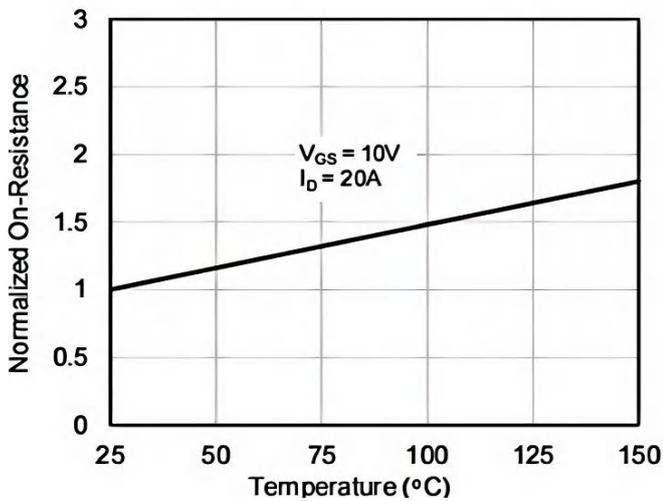


Fig.11 On-Resistance Variation vs Temperature

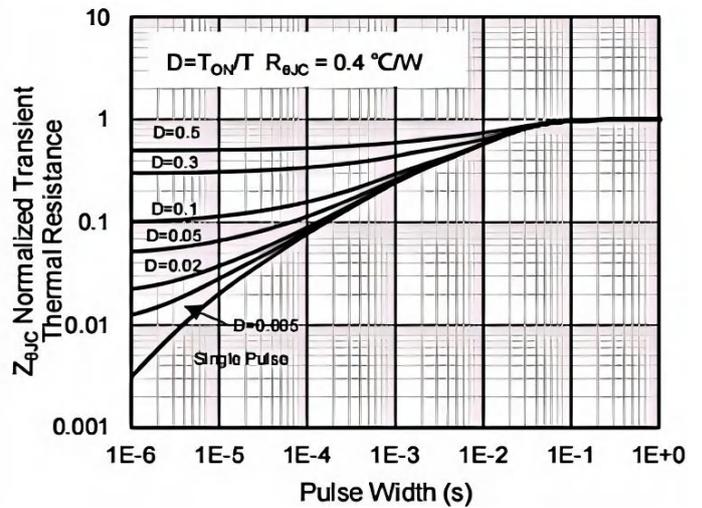
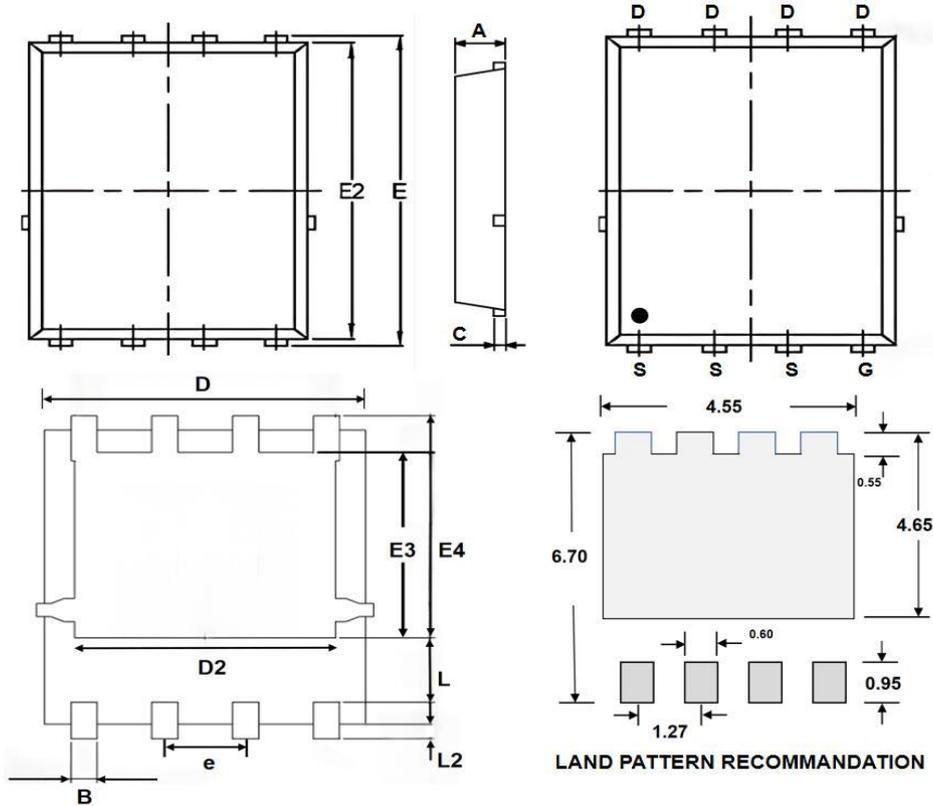


Fig.12 Transient Thermal Response Curve

Ordering Information

Part Number	Package code	Packaging
HSBA0084A	PRPAK5*6	3000/Tape&Reel

PRPAK5*6 Package Outline



SYMBOLS	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.80	--	1.20	0.031	--	0.047
B	0.25	--	0.51	0.012	--	0.020
C	0.15	--	0.35	0.006	--	0.014
D	4.80	--	5.45	0.189	--	0.209
D2	3.61	--	4.35	0.142	--	0.171
E	5.90	--	6.35	0.232	--	0.250
E2	5.42	--	6.06	0.213	--	0.232
E3	3.23	--	3.90	0.127	--	0.154
E4	3.69	--	4.55	0.145	--	0.179
L	0.61	--	1.80	0.024	--	0.071
L2	0.05	--	0.36	0.002	--	0.014
e	--	1.27	--	--	0.050	--

HSBA0084A Marking:

