

**General Description**

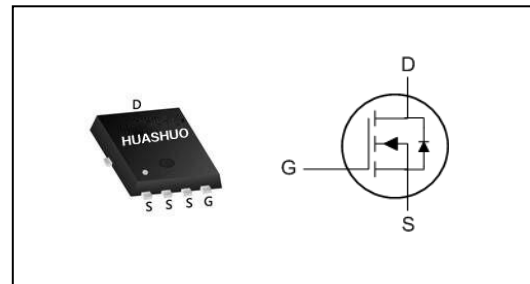
- 100% UIS Tested
- Super Trench Technology
- Surface-mounted package
- MSL1
- $T_j$  max 175°C

**Applications**

- Motor drivers
- DC/DC Converters

**Product Summary**

$V_{DS}$	30	V
$R_{DS(ON),MAX}$	0.5	mΩ
$I_D$	197	A

**PRPAK5X6 Pin Configuration**

**Absolute Maximum Ratings**

Symbol	Parameter	Rating	Units
$V_{DS}$	Drain-Source Voltage	30	V
$V_{GS}$	Gate-Source Voltage	±20	V
$I_D@T_C=25^\circ C$	Continuous Drain Current, $V_{GS}$ @ 10V <sup>1,6</sup>	197	A
$I_{DM}$	Pulsed Drain Current <sup>2</sup>	788	A
EAS	Single Pulse Avalanche Energy <sup>3</sup>	420	mJ
$I_S$	Avalanche Current	197	A
$P_D@T_C=25^\circ C$	Total Power Dissipation <sup>4</sup>	35	W
$T_{STG}$	Storage Temperature Range	-55 to 175	°C
$T_J$	Operating Junction Temperature Range	-55 to 175	°C

**Thermal Data**

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-Ambient <sup>1</sup>	---	62.5	°C/W
$R_{\theta JC}$	Thermal Resistance Junction-Case <sup>1</sup>	---	3.5	°C/W



**Electrical Characteristics (T<sub>J</sub>=25 °C, unless otherwise noted)**

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV <sub>DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V, I <sub>D</sub> =250uA	30	---	---	V
R <sub>DS(ON)</sub>	Static Drain-Source On-Resistance <sup>2</sup>	V <sub>GS</sub> =10V, I <sub>D</sub> =50A	---	0.45	0.5	mΩ
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =30A	---	0.75	0.85	
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>GS</sub> =V <sub>DS</sub> , I <sub>D</sub> =250uA	1	---	2	V
I <sub>DSS</sub>	Drain-Source Leakage Current	V <sub>DS</sub> =24V, V <sub>GS</sub> =0V, T <sub>J</sub> =25°C	---	---	1	uA
		V <sub>DS</sub> =24V, V <sub>GS</sub> =0V, T <sub>J</sub> =85°C	---	---	30	
I <sub>GSS</sub>	Gate-Source Leakage Current	V <sub>GS</sub> =±20V, V <sub>DS</sub> =0V	---	---	±100	nA
Q <sub>g</sub>	Total Gate Charge	V <sub>DS</sub> =15V, V <sub>GS</sub> =10V, I <sub>D</sub> =50A	---	142	---	nC
Q <sub>gs</sub>	Gate-Source Charge		---	26	---	
Q <sub>gd</sub>	Gate-Drain Charge		---	27	---	
T <sub>d(on)</sub>	Turn-On Delay Time	V <sub>DD</sub> =15V, V <sub>GS</sub> =10V, R <sub>G</sub> =4.5Ω, R <sub>L</sub> =0.3Ω, I <sub>D</sub> =50A	---	12.3	---	ns
T <sub>r</sub>	Rise Time		---	92	---	
T <sub>d(off)</sub>	Turn-Off Delay Time		---	158	---	
T <sub>f</sub>	Fall Time		---	119	---	
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> =15V, V <sub>GS</sub> =0V, f=1MHz	---	8080	---	pF
C <sub>oss</sub>	Output Capacitance		---	3466	---	
C <sub>rss</sub>	Reverse Transfer Capacitance		---	236	---	

**Diode Characteristics**

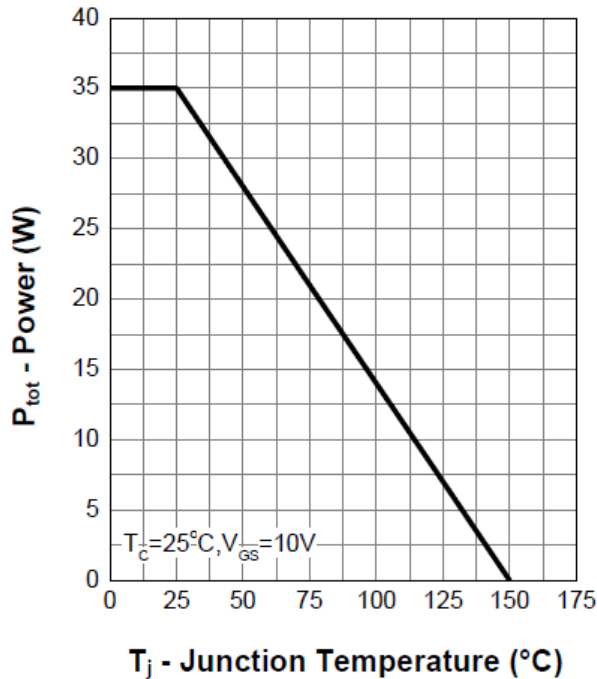
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
t <sub>rr</sub>	Reverse Recovery Time	I <sub>s</sub> =30A, dI <sub>s</sub> /dt=100A/us	---	83	---	nS
Q <sub>rr</sub>	Reverse Recovery Charge		---	113	---	nC
V <sub>SD</sub>	Diode Forward Voltage <sup>2</sup>	V <sub>GS</sub> =0V, I <sub>S</sub> =50A, T <sub>J</sub> =25°C	---	---	1.3	V

Note :

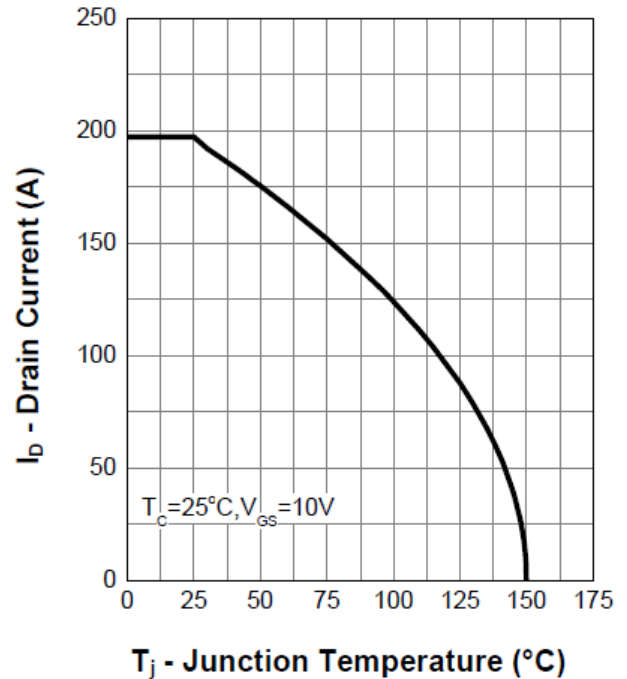
- 1.The data tested by surface mounted on a 1 inch<sup>2</sup> FR-4 board with 2OZ copper.
- 2.The data tested by pulsed , pulse width ≤ 300us , duty cycle ≤ 2%
- 3.The power dissipation is limited by 150°C junction temperature
- 4.The data is theoretically the same as I<sub>D</sub> and I<sub>DM</sub> , in real applications , should be limited by total power dissipation.

**Typical Characteristics**

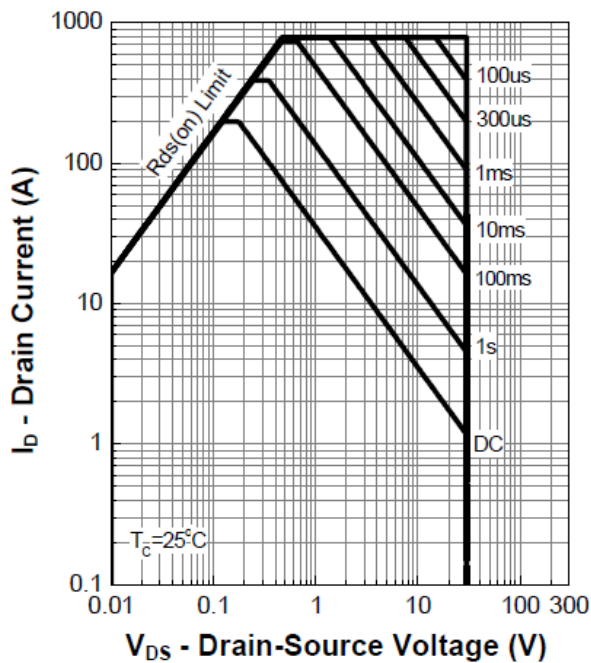
**Power Capability**



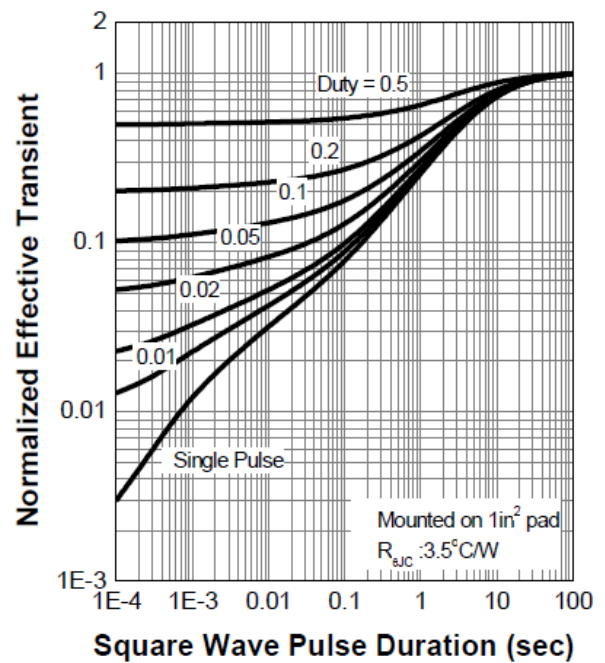
**Current Capability**



**Safe Operation Area**

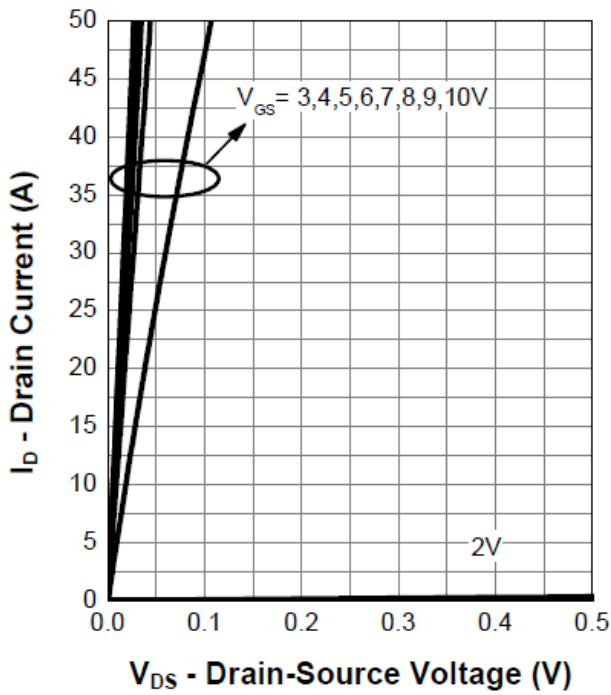


**Transient Thermal Impedance**

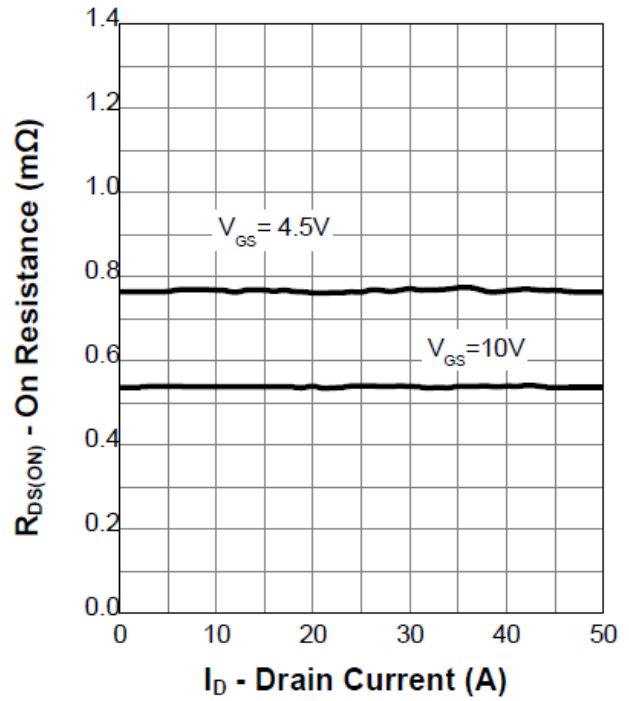




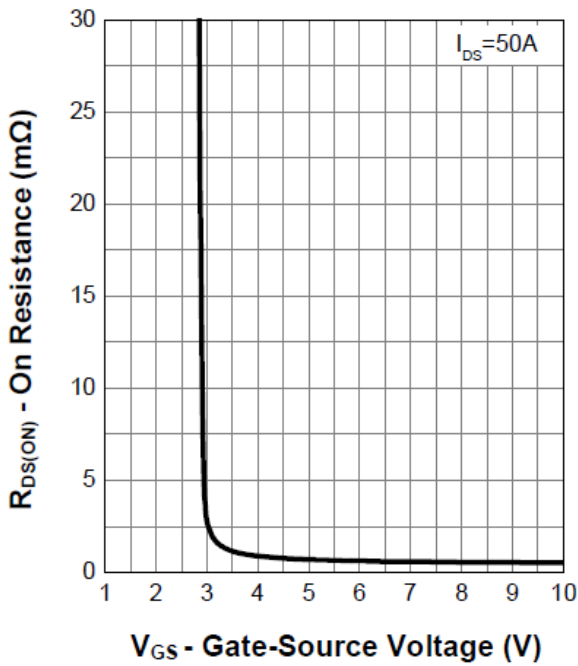
**Output Characteristics**



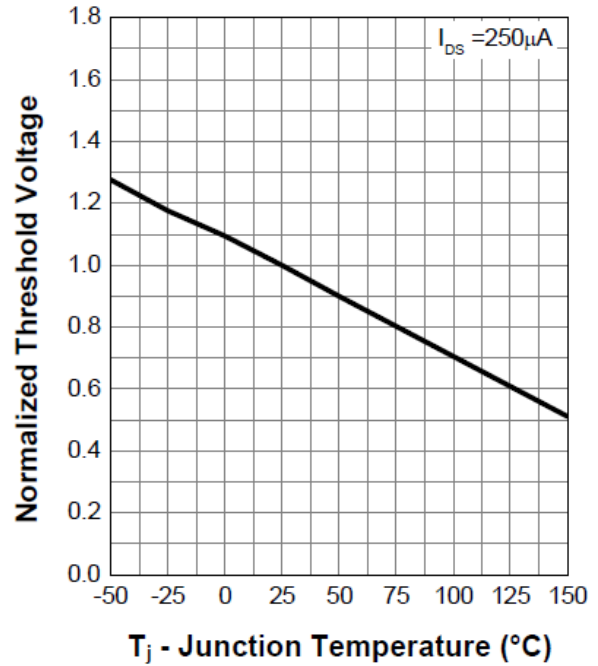
**On Resistance**

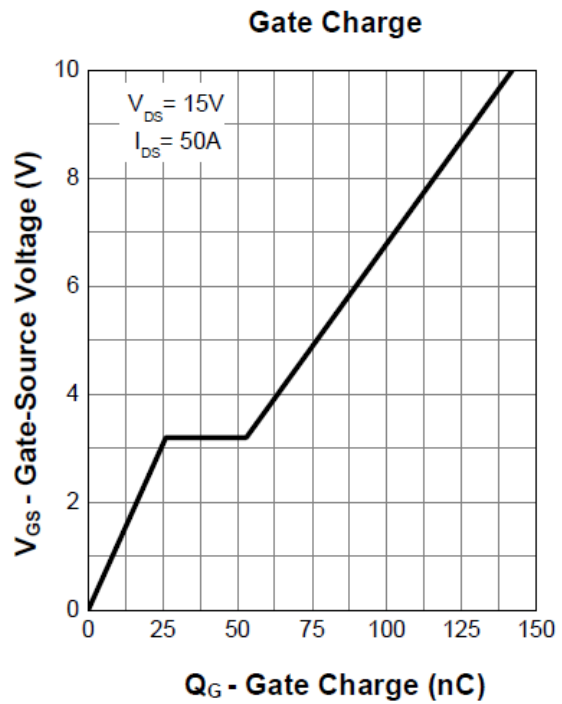
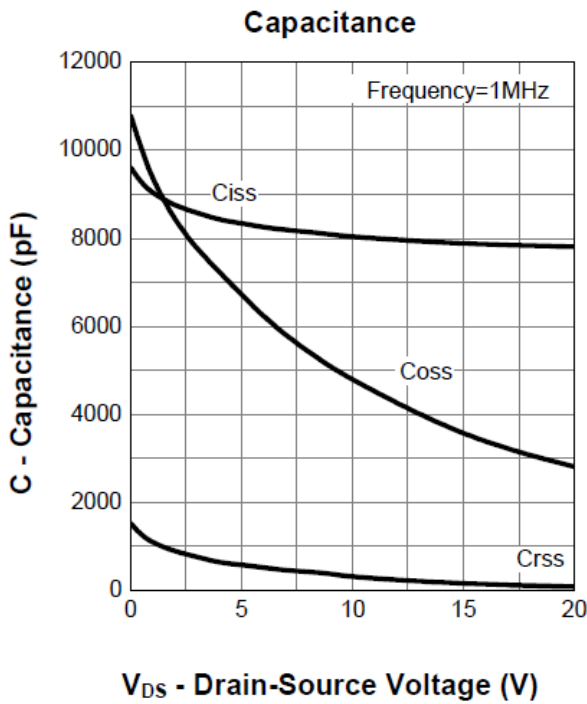
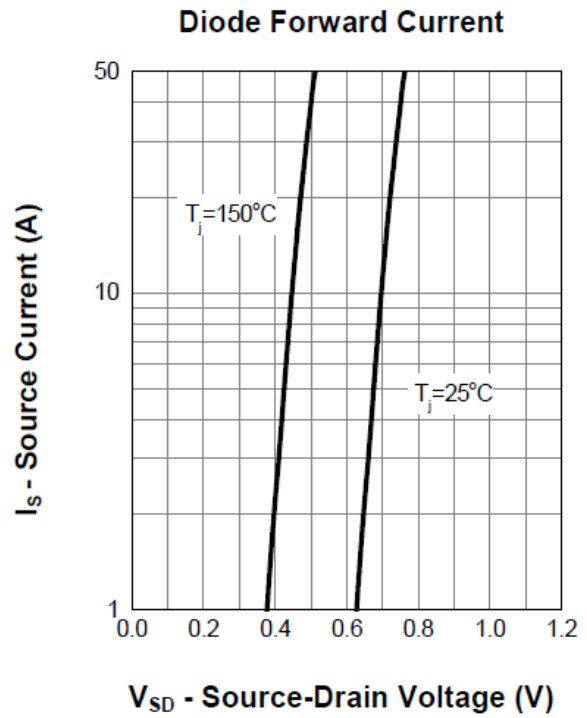
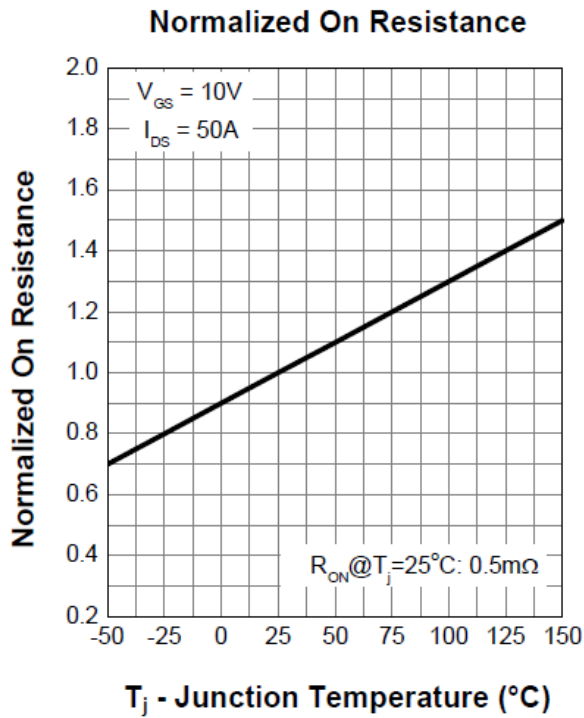


**Transfer Characteristics**



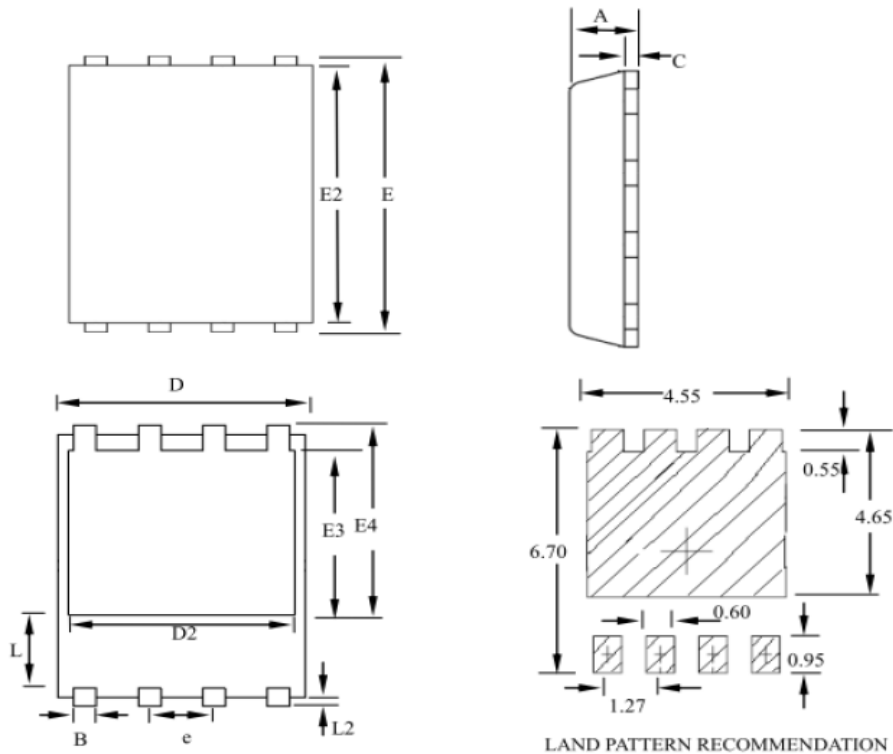
**Normalized Threshold Voltage**





## Ordering Information

Part Number	Package code	Packaging
HSBA005N03	PRPAK5*6	5000/Tape&Reel



SYMBOLS	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.80	--	1.20	0.031	--	0.047
B	0.30	--	0.51	0.012	--	0.020
C	0.15	--	0.35	0.006	--	0.014
D	4.80	--	5.30	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	--	5.90	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	--

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