

Description

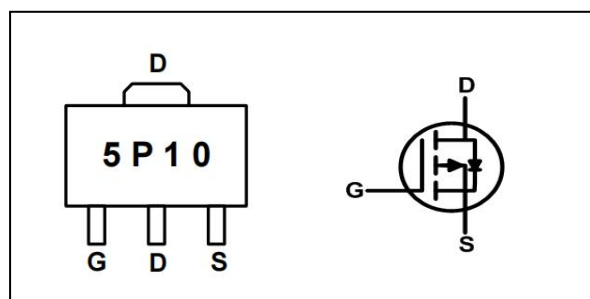
The HSK5P10 is the high cell density trenched P-ch MOSFETs, which provides excellent R_{DS(ON)} and efficiency for most of the small power switching and load switch applications. The HSK5P10 meets the RoHS and Green Product requirement with full function reliability approved.

- Super Low Gate Charge
- Excellent Cdv/dt effect decline
- Green Device Available
- Advanced high cell density Trench technology

Product Summary

V _{DS}	-100	V
R _{DS(ON),typ}	280	mΩ
I _D	-5	A

SOT-89 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 _A =25°C	Continuous Drain Current, V _{GS} @ -10V ¹	-5	A
I _D @T _A =70°C	Continuous Drain Current, V _{GS} @ -10V ¹	-3.5	A
I _{DM}	Pulsed Drain Current ²	-20	A
P _D @T _A =25°C	Total Power Dissipation ³	1.7	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 _{θJA}	Thermal Resistance Junction-ambient ¹	---	80	°C/W
R _{θJC}	Thermal Resistance Junction-Case ¹	---	50	°C/W



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 =-250uA	-100	---	---	V
ΔBV _{DSS} /ΔT _J	BVDSS Temperature Coefficient	Reference to 25°C, I _D =-1mA	---	-0.0624	---	V/°C
R _{DS(ON)}	Static Drain-Source On-Resistance ²	V _{GS} =-10V, I _D =-5A	---	280	330	mΩ
		V _{GS} =-4.5V, I _D =-3A	---	290	360	
V _{GS(th)}	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D =-250uA	-1.0	-2.0	-3.0	V
ΔV _{GS(th)}	V _{GS(th)} Temperature Coefficient		---	4.5	---	mV/°C
I _{DSS}	Drain-Source Leakage Current	V _{DS} =-100V, V _{GS} =0V, T _J =25°C	---	---	1	uA
		V _{DS} =-100V, V _{GS} =0V, T _J =55°C	---	---	10	
I _{GSS}	Gate-Source Leakage Current	V _{GS} = ± 20V, V _{DS} =0V	---	---	± 100	nA
Q _g	Total Gate Charge	V _{DS} =-50V, V _{GS} =-10V, I _D =-2A	---	15	---	nC
Q _{gs}	Gate-Source Charge		---	5.4	---	
Q _{gd}	Gate-Drain Charge		---	4	---	
T _{d(on)}	Turn-On Delay Time	V _{DD} =-50V, V _{GS} =-10V, R _G =3.3Ω I _D =-1A	---	14	---	ns
T _r	Rise Time		---	3.7	---	
T _{d(off)}	Turn-Off Delay Time		---	34	---	
T _f	Fall Time		---	6	---	
C _{iss}	Input Capacitance	V _{DS} =-50V, V _{GS} =0V, f=1MHz	---	990	---	pF
C _{oss}	Output Capacitance		---	38	---	
C _{rss}	Reverse Transfer Capacitance		---	23	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I _S	Continuous Source Current ^{1,4}	V _G =V _D =0V, Force Current	---	---	-5	A
I _{SM}	Pulsed Source Current ^{2,4}		---	---	-20	A
V _{SD}	Diode Forward Voltage ²	V _{GS} =0V, I _S =-1A, T _J =25°C	---	---	-1.2	V

Note :

- 1.The data tested by surface mounted on a 1 inch²FR-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_D and I_{DM}, in real applications, should be limited by total power dissipation.



Typical Characteristics

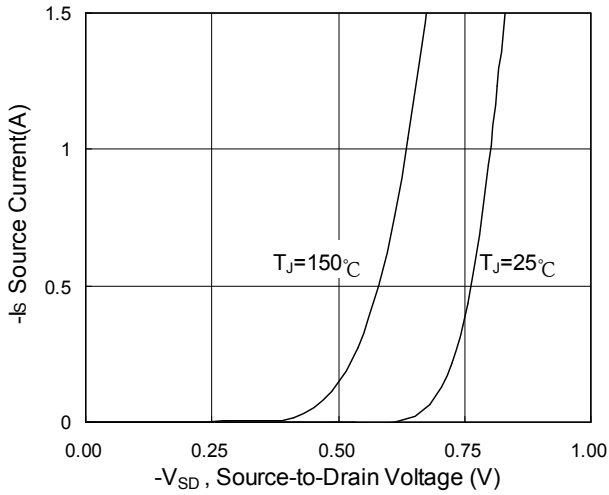


Fig.1 Forward Characteristics Of Reverse

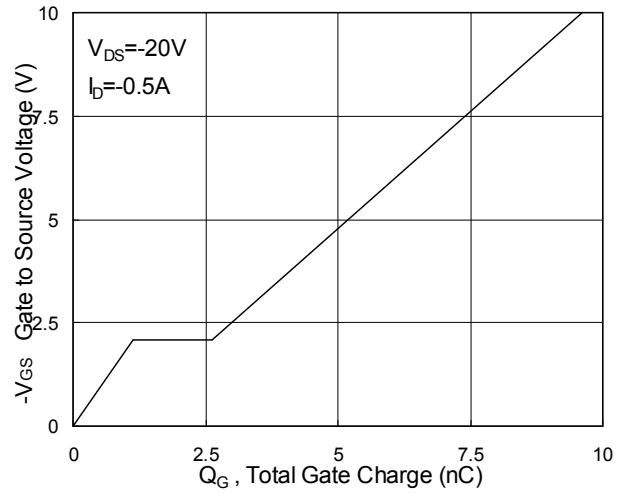


Fig.2 Gate-Charge Characteristics

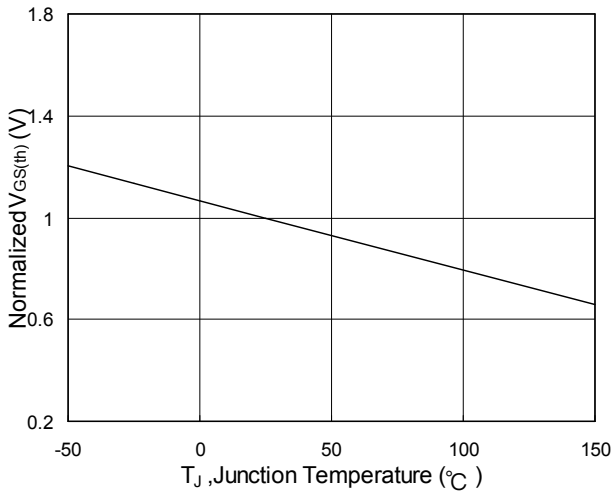


Fig.3 Normalized $V_{GS(th)}$ vs. T_J

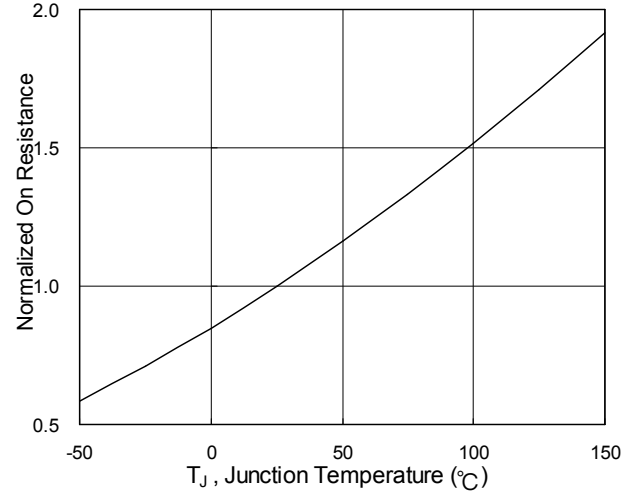


Fig.4 Normalized $R_{DS(on)}$ vs. T_J

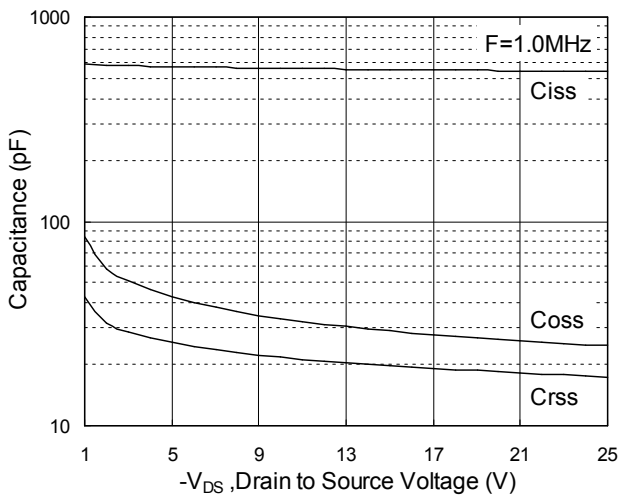


Fig.5 Capacitance

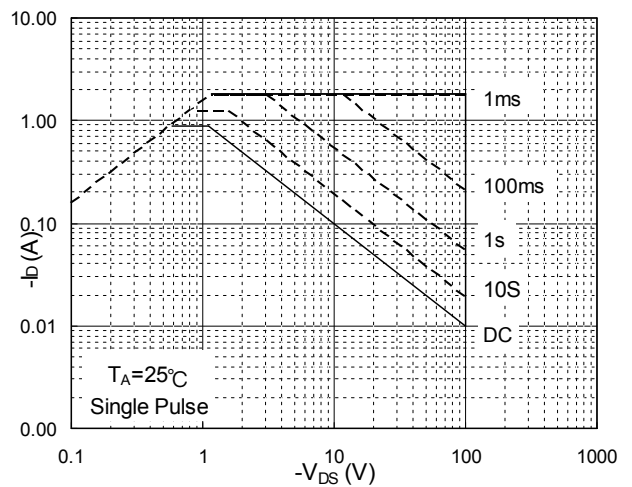


Fig.6 Safe Operating Area



P-Ch 100V Fast Switching MOSFETs

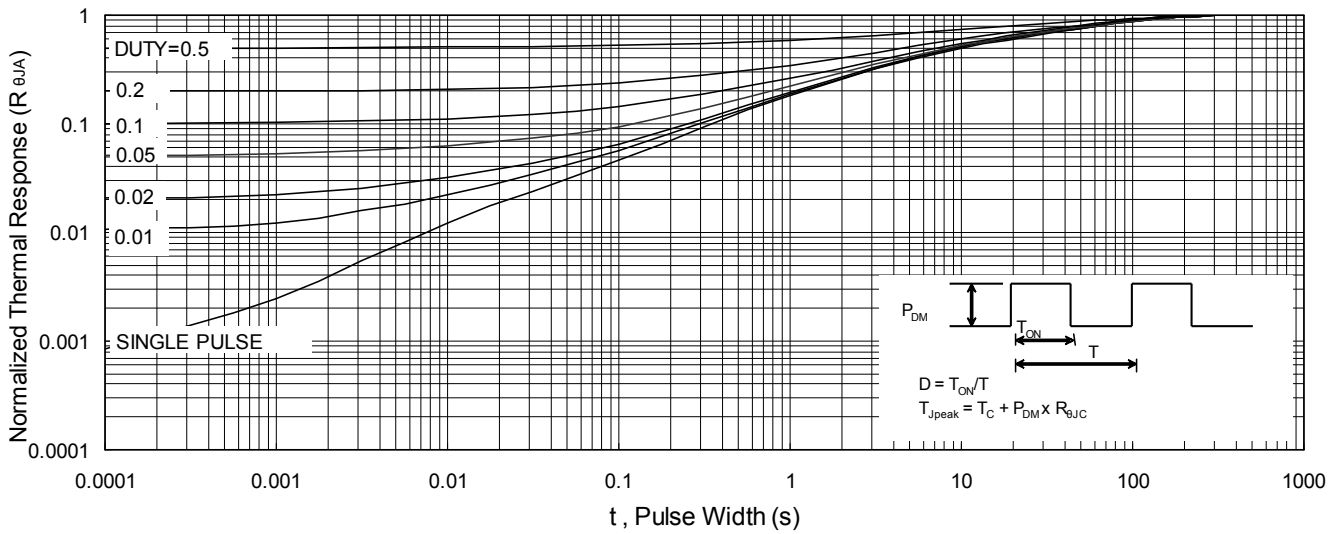


Fig.7 Normalized Maximum Transient Thermal Impedance

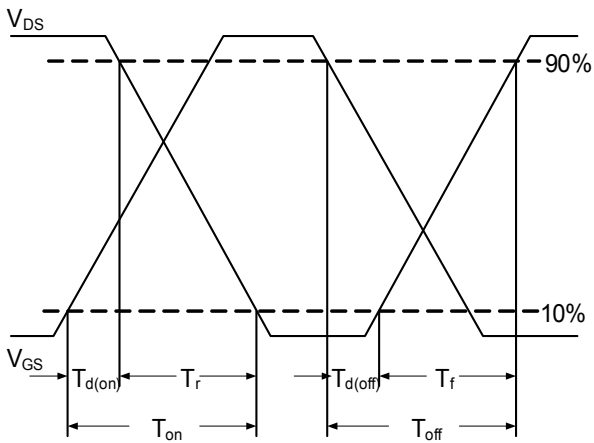


Fig.8 Switching Time Waveform

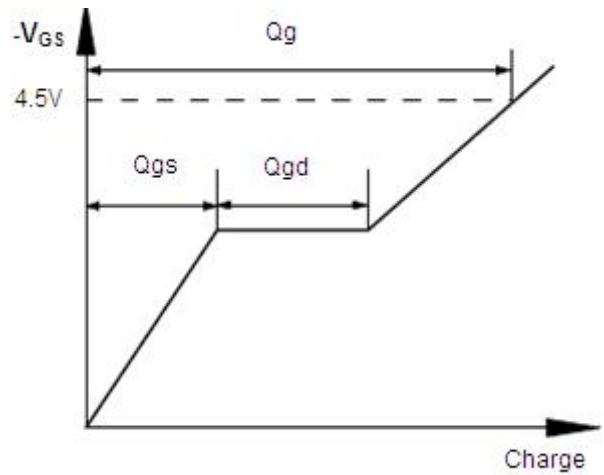
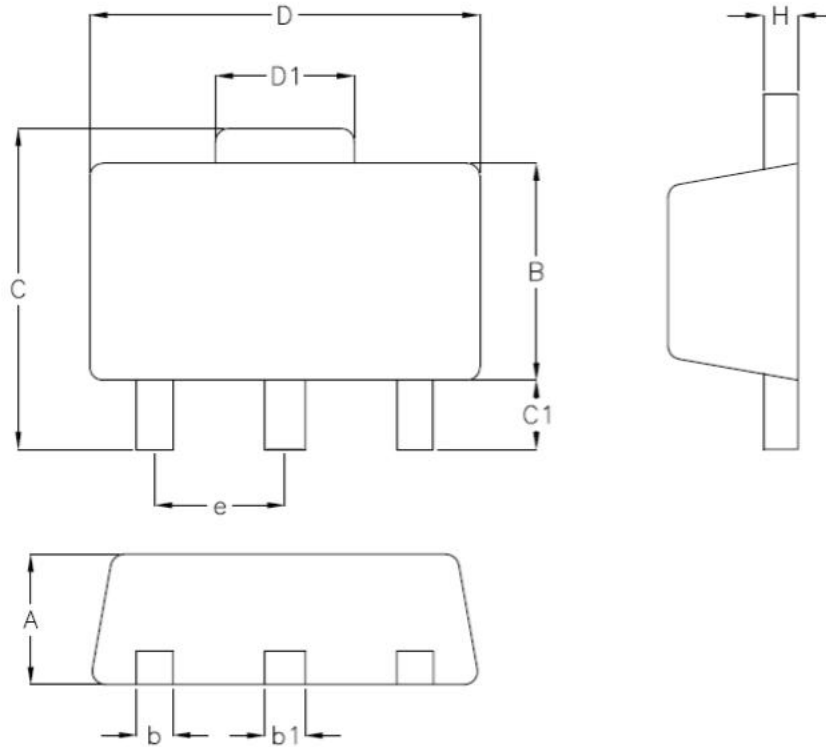


Fig.9 Gate Charge Waveform



Ordering Information

Part Number	Package code	Packaging
HSK5P10	SOT-89	1000/Tape&Reel



SYMBOLS	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	1.397	1.600	0.055	0.063
b	0.420	0.540	0.017	0.021
b1	0.420	0.540	0.017	0.021
B	2.388	2.591	0.094	0.102
C	3.937	4.242	0.155	0.167
C1	0.787	1.194	0.031	0.047
D	4.394	4.597	0.173	0.181
D1	1.397	1.753	0.055	0.069
e	1.448	1.549	0.057	0.061
H	0.350	0.44	0.014	0.017

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