

Features

- 100% EAS Guaranteed
- Green Device Available
- Super Low Gate Charge
- Excellent CdV/dt effect decline
- Advanced high cell density Trench technology

Product Summary

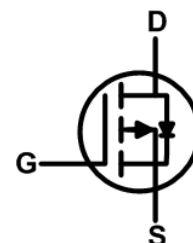
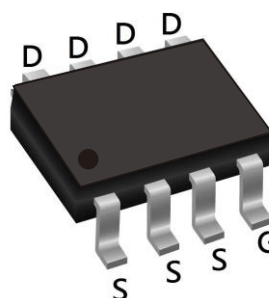
BVDSS	RDSON	ID
-60V	70mΩ	-3.7A

Description

The JHS6103 is the high cell density trenched P-ch MOSFETs, which provide excellent RDSON and gate charge for most of the synchronous buck converter applications.

The JHS6103 meet the RoHS and Green Product requirement, 100% EAS guaranteed with full function reliability approved.

SOP8 Pin Configuration



Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	-60	V
V_{GS}	Gate-Source Voltage	± 20	V
$I_D @ T_A = 25^\circ\text{C}$	Continuous Drain Current, $V_{GS} @ -10\text{V}^1$	-3.7	A
$I_D @ T_A = 70^\circ\text{C}$	Continuous Drain Current, $V_{GS} @ -10\text{V}^1$	-3	A
I_{DM}	Pulsed Drain Current ²	-7.5	A
EAS	Single Pulse Avalanche Energy ³	35.3	mJ
I_{AS}	Avalanche Current	-26.6	A
$P_D @ T_A = 25^\circ\text{C}$	Total Power Dissipation ⁴	1.5	W
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ\text{C}$
T_J	Operating Junction Temperature Range	-55 to 150	$^\circ\text{C}$

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-Ambient ¹	---	85	$^\circ\text{C/W}$
$R_{\theta JC}$	Thermal Resistance Junction-Case ¹	---	36	$^\circ\text{C/W}$

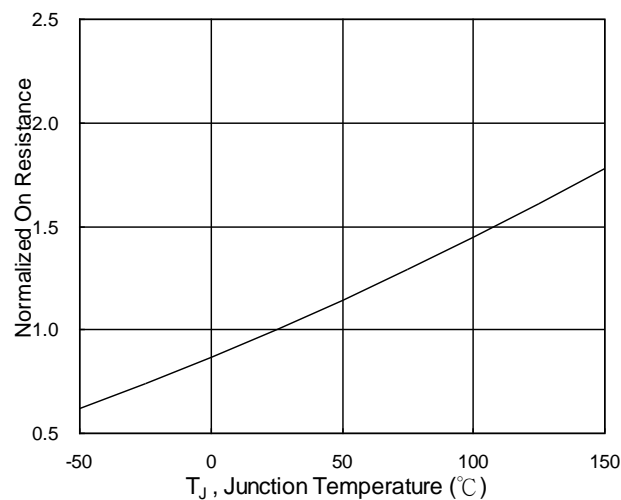
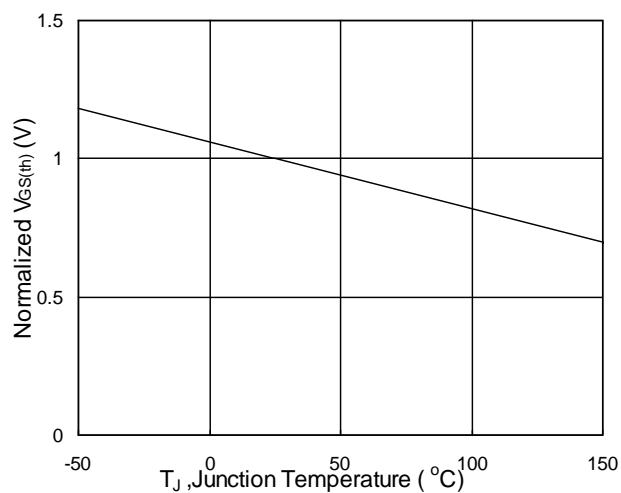
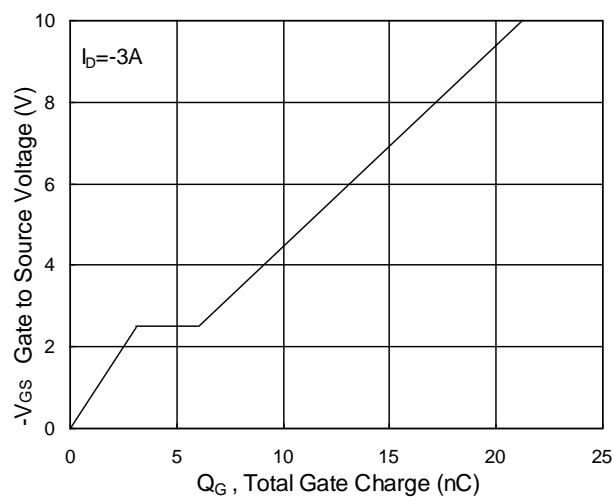
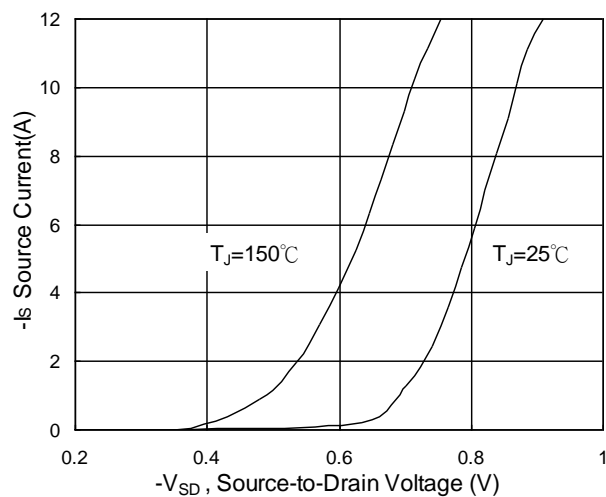
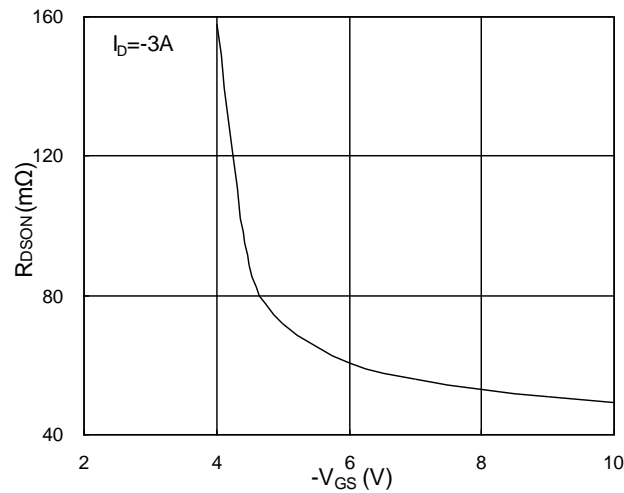
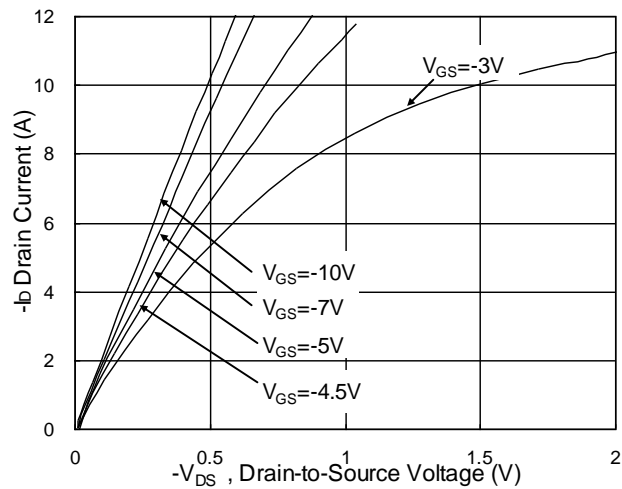
Electrical Characteristics (T_J=25 °C, unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V , I _D =-250uA	-60	---	---	V
△BV _{DSS} /△T _J	BV _{DSS} Temperature Coefficient	Reference to 25°C , I _D =-1mA	---	-0.03	---	V/°C
R _{DS(ON)}	Static Drain-Source On-Resistance ²	V _{GS} =-10V , I _D =-3A	---	---	70	mΩ
		V _{GS} =-4.5V , I _D =-2A	---	---	105	
V _{GS(th)}	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D =-250uA	-1.2	---	-2.5	V
△V _{GS(th)}	V _{GS(th)} Temperature Coefficient		---	4.56	---	mV/°C
I _{DSS}	Drain-Source Leakage Current	V _{DS} =-48V , V _{GS} =0V , T _J =25°C	---	---	1	uA
		V _{DS} =-48V , V _{GS} =0V , T _J =55°C	---	---	5	
I _{GSS}	Gate-Source Leakage Current	V _{GS} =±20V , V _{DS} =0V	---	---	±100	nA
g _{fs}	Forward Transconductance	V _{DS} =-5V , I _D =-3A	---	15	---	S
R _g	Gate Resistance	V _{DS} =0V , V _{GS} =0V , f=1MHz	---	13.5	---	Ω
Q _g	Total Gate Charge (-4.5V)	V _{DS} =-48V , V _{GS} =-4.5V , I _D =-3A	---	9.86	---	nC
Q _{gs}	Gate-Source Charge		---	3.08	---	
Q _{gd}	Gate-Drain Charge		---	2.95	---	
T _{d(on)}	Turn-On Delay Time	V _{DD} =-15V , V _{GS} =-10V , R _G =3.3Ω, I _D =-1A	---	28.8	---	ns
T _r	Rise Time		---	19.8	---	
T _{d(off)}	Turn-Off Delay Time		---	60.8	---	
T _f	Fall Time		---	7.2	---	
C _{iss}	Input Capacitance	V _{DS} =-15V , V _{GS} =0V , f=1MHz	---	1447	---	pF
C _{OSS}	Output Capacitance		---	97.3	---	
C _{rSS}	Reverse Transfer Capacitance		---	70	---	
Diode Characteristics						
I _S	Continuous Source Current ^{1,5}	V _G =V _D =0V , Force Current	---	---	-3.7	A
I _{SM}	Pulsed Source Current ^{2,5}		---	---	-7.5	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 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=0.1mH, I_{AS}=-26.6A
- 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.

Typical Characteristics



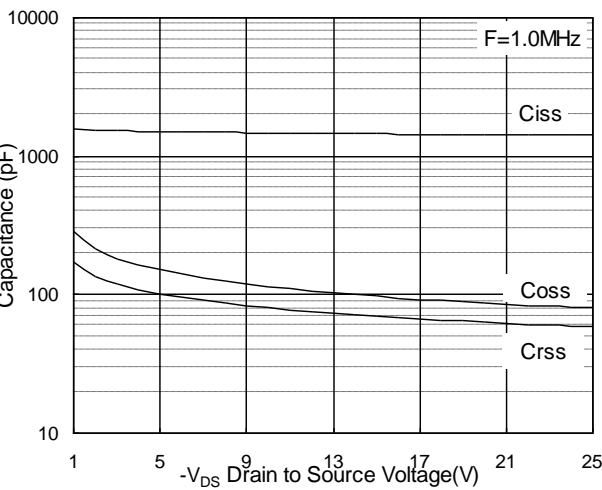


Fig.7 Capacitance

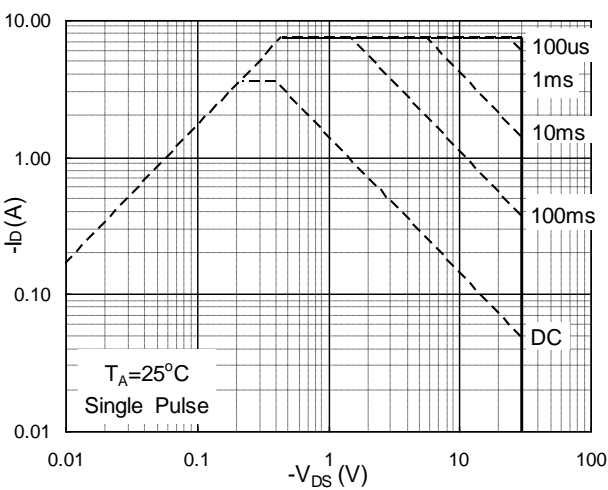


Fig.8 Safe Operating Area

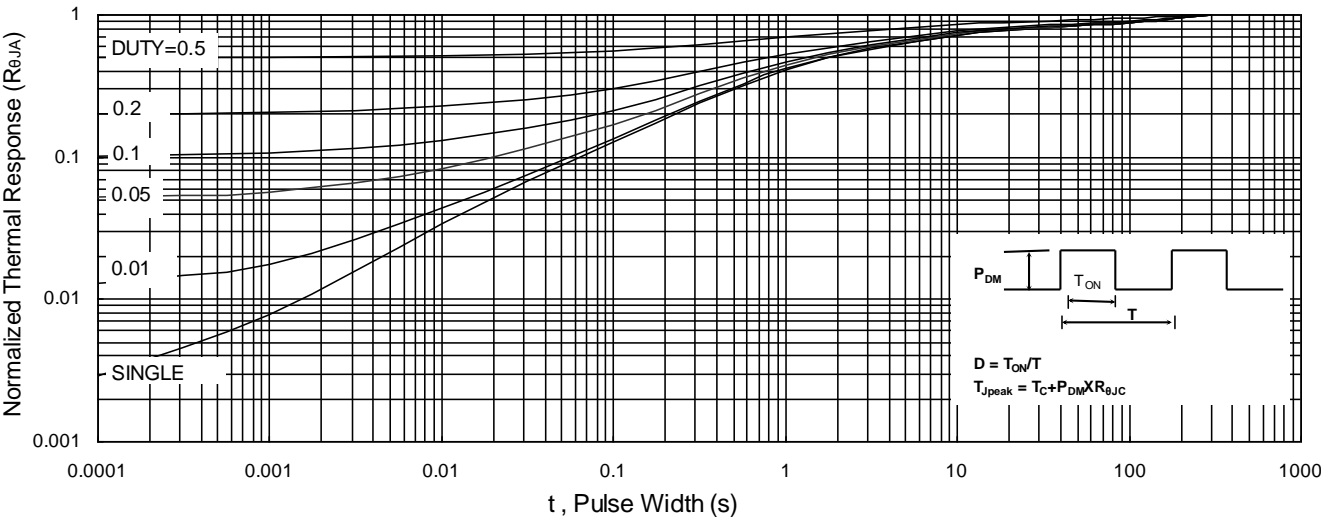


Fig.9 Normalized Maximum Transient Thermal Impedance

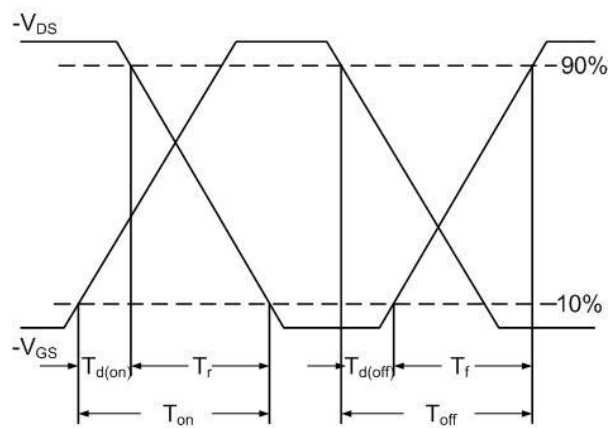


Fig.10 Switching Time Waveform

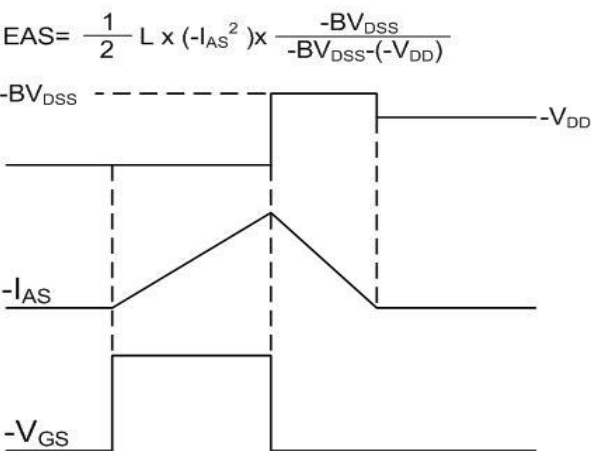
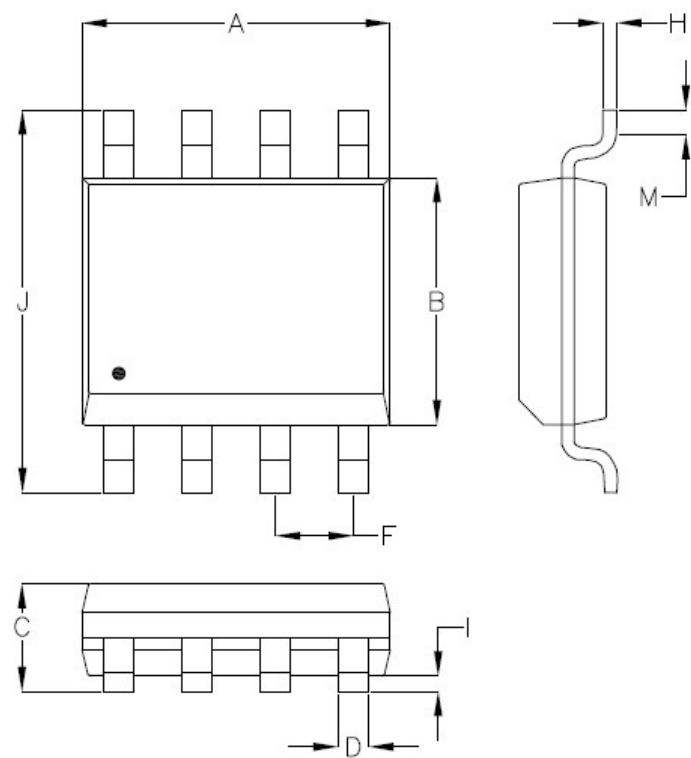


Fig.11 Unclamped Inductive Waveform

SOP-8L Package Outline



SYMBOLS	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	4.700	5.150	0.185	0.203
B	3.700	4.100	0.146	0.161
C	1.23	1.753	0.048	0.069
D	0.310	0.510	0.012	0.020
F	1.070	1.470	0.042	0.058
H	0.160	0.254	0.006	0.010
I	0.050	0.254	0.002	0.010
J	5.750	6.250	0.226	0.246
M	0.400	1.270	0.016	0.050

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