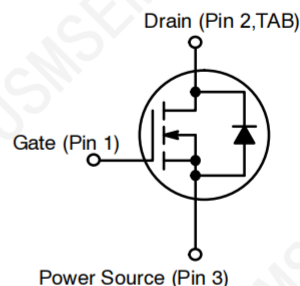


DESCRIPTION

The BSH105 is the N-Channel logic enhancement mode power field effect transistor is produced using high cell density advanced trench technology.. This high density process is especially tailored to minimize on-state resistance. These devices are particularly suited for low voltage application, and low in-line power loss are needed in a very small outline surface mount package.



FEATURE

- ◆ 20V/4.5A, $R_{DS(ON)}=25m\Omega(\text{typ.})@V_{GS}=4.5V$
- ◆ 20V/2.5A, $R_{DS(ON)}=55m\Omega(\text{typ.})@V_{GS}=2.5V$
- ◆ 20V/2.0A, $R_{DS(ON)}=80m\Omega(\text{typ.})@V_{GS}=1.8V$
- ◆ Super high design for extremely low $R_{DS(ON)}$
- ◆ Exceptional on-resistance and Maximum DC current capability
- ◆ Full RoHS compliance
- ◆ SOT23-3L package design

APPLICATIONS

- ◆ Power Management
- ◆ Portable Equipment
- ◆ DC/DC Converter
- ◆ Load Switch
- ◆ DSC
- ◆ LCD Display inverter

ABSOLUTE MAXIMUM RATINGS ($T_A=25^{\circ}C$ Unless otherwise noted)

Symbol	Parameter		Typical	Unit
V _{DSS}	Drain-Source Voltage		20	V
V _{GSS}	Gate-Source Voltage		±10	V
I _D	Continuous Drain Current (T _C =25°C)	V _{GS} =10V	4.5	A
	Continuous Drain Current (T _C =70°C)		3.0	
I _{DM}	Pulsed Drain Current		20	A
I _S	Continuous Source Current (Diode Conduction)		1.5	A
P _D	Power Dissipation	T _A =25°C	1.5	W
		T _A =70°C	0.9	
T _J	Operation Junction Temperature		150	°C
T _{STG}	Storage Temperature Range		-55~+150	°C
R _{θJA}	Thermal Resistance Junction to Ambient		90	°C/W

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged.

Absolute maximum ratings are stress rating only and functional device operation is not implied

ELECTRICAL CHARACTERISTICS (T_A=25°C Unless otherwise noted)

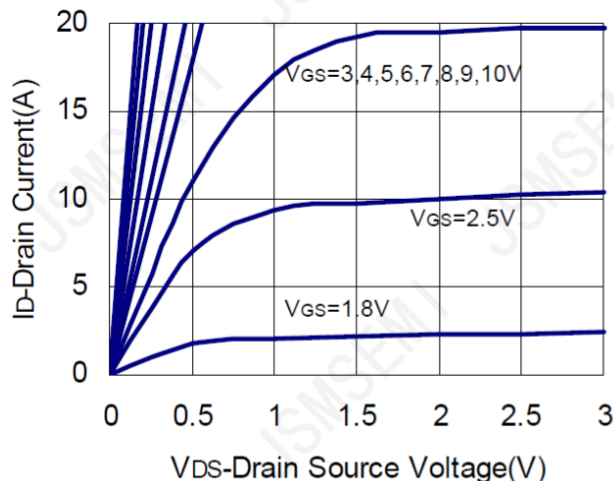
Symbol	Parameter	Condition	Min	Typ	Max	Unit
Static Parameters						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250uA	20			V
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250uA	0.5		1.0	V
I _{GSS}	Gate Leakage Current	V _{DS} =0V, V _{GS} =±12V			±100	nA
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =20V, V _{GS} =0			1	uA
		V _{DS} =20V, V _{GS} =0 T _J =55℃			5	
R _{DS(ON)}	Drain-Source On-Resistance	V _{GS} =4.5V, I _D =3.0A		25	45	mΩ
		V _{GS} =2.5V, I _D =2.5A		40	60	
		V _{GS} =1.8V, I _D =2.0A		65	90	
Source-Drain Diode						
V _{SD}	Diode Forward Voltage	I _S =1.7A, V _{GS} =0V		0.78	1.2	V
Dynamic Parameters						
Q _g	Total Gate Charge	V _{DS} =10V V _{GS} =4.5V I _D =5.0A		11	13	nC
Q _{gs}	Gate-Source Charge			1.45		
Q _{gd}	Gate-Drain Charge			2.3		
C _{iss}	Input Capacitance	V _{DS} =10V V _{GS} =0V f=1MHz		578		pF
C _{oss}	Output Capacitance			116		
C _{rss}	Reverse Transfer Capacitance			96		
T _{d(on)}	Turn-On Time	V _{DS} =10V I _D =1.0A		14.5	25	nS
T _r				42	62	
T _{d(off)}	Turn-Off Time	V _{GEN} =4.5V R _G =6Ω		46	67	
T _f				34	43	

Note: 1. Pulse test: pulse width≤300uS, duty cycle≤2%

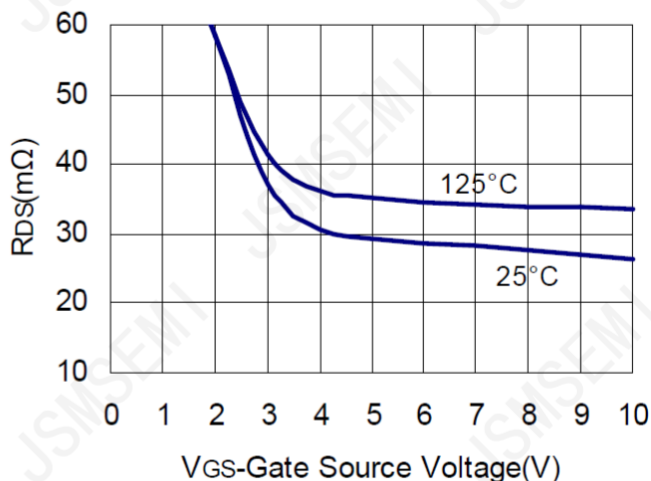
2.Static parameters are based on package level with recommended wire bonding

TYPICAL CHARACTERISTICS (25°C Unless Note)

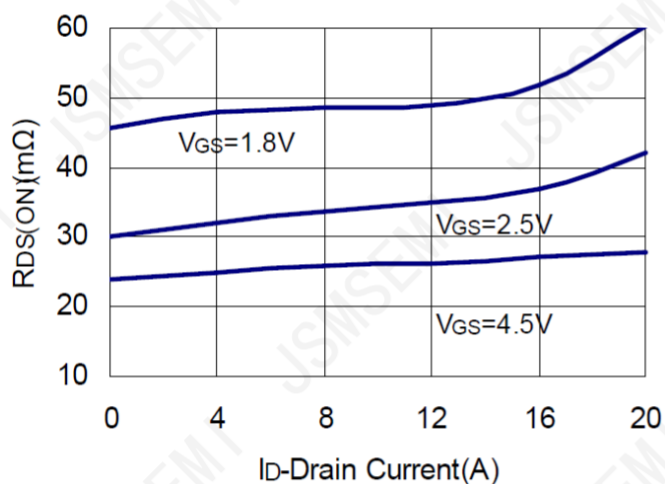
Output Characteristics



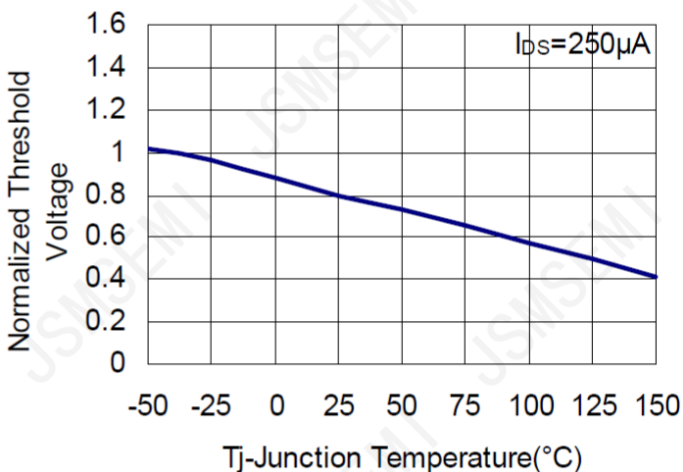
Drain-Source On Resistance



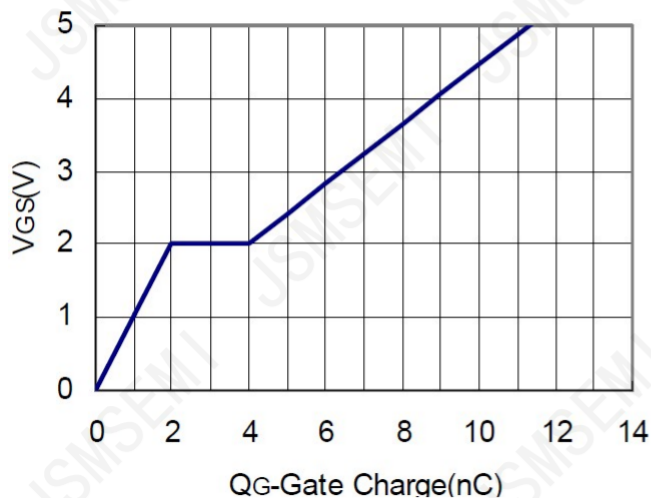
Drain Source On Resistance



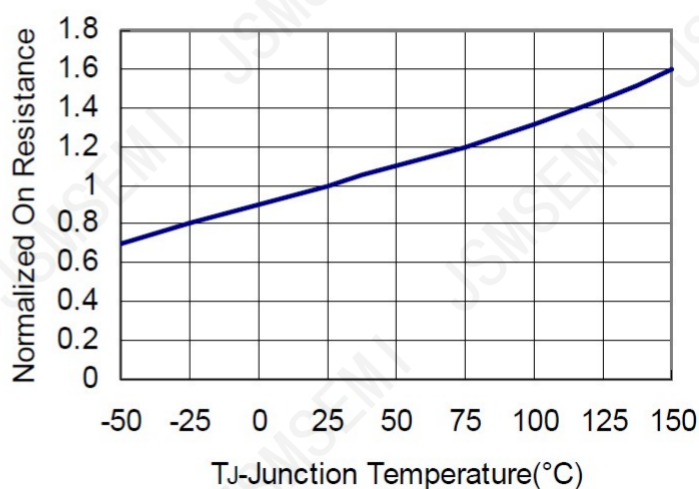
Gate Threshold Voltage



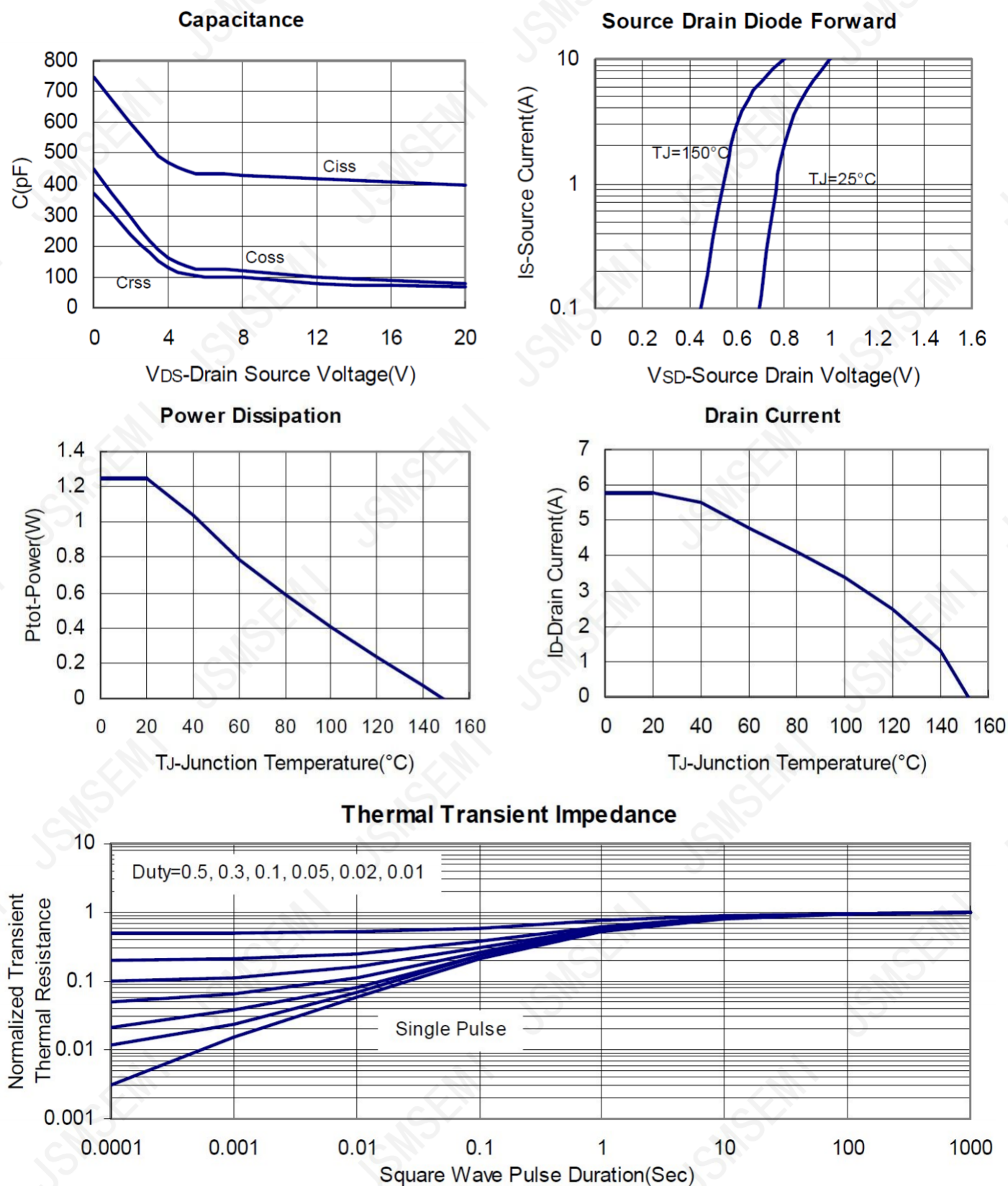
Gate Charge



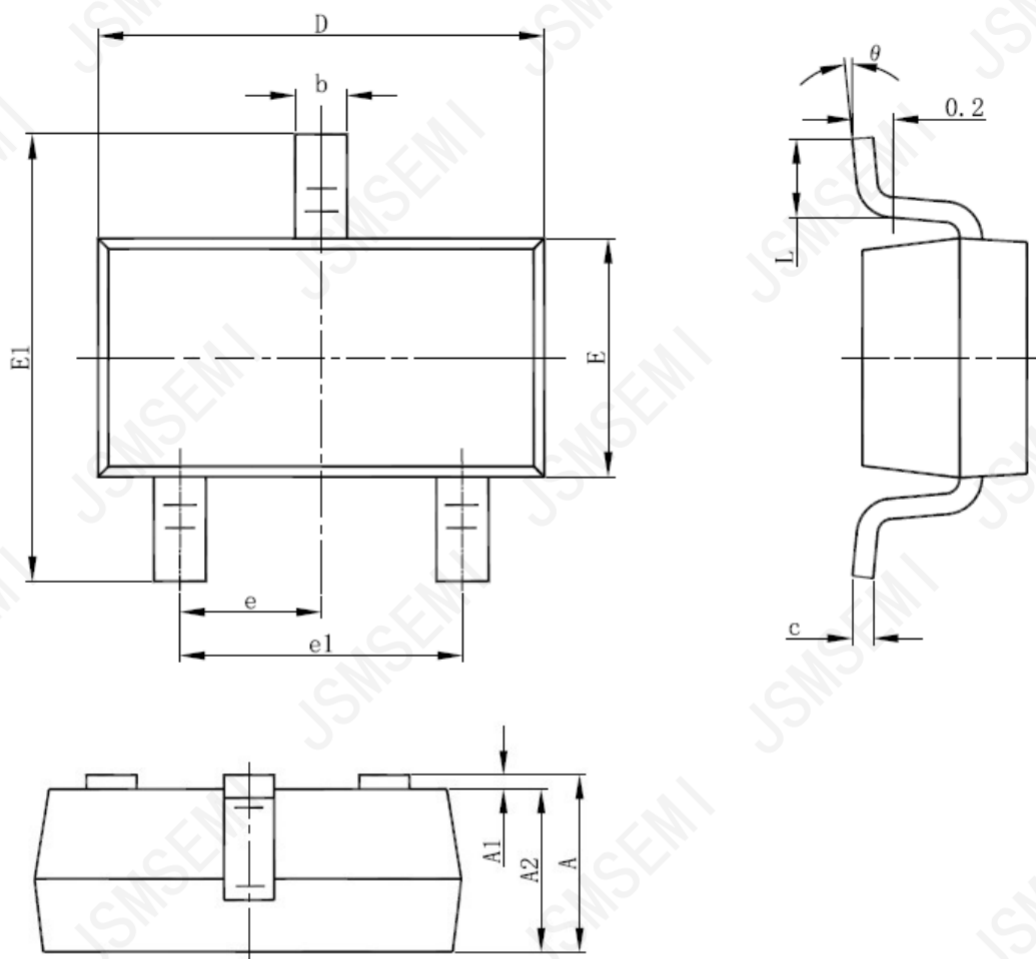
Drain Source On Resistance



TYPICAL CHARACTERISTICS (continuous)



SOT23-3L PACKAGE OUTLINE DIMENSIONS



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°

Revision History

Rev.	Change	Date
V1.0	Initial version	2/23/2024

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