

Product Summary

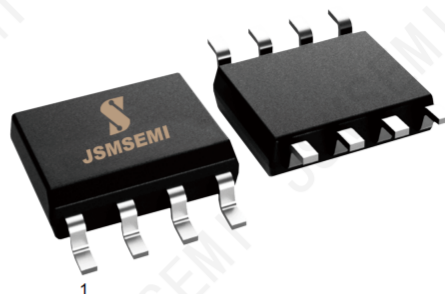
- V_{DS} 40V
- I_D 20A
- $R_{DS(ON)}$ (at $V_{GS}=10V$) $<6m\Omega$
- 100% EAS Tested
- 100% ∇V_{DS} Tested

General Description

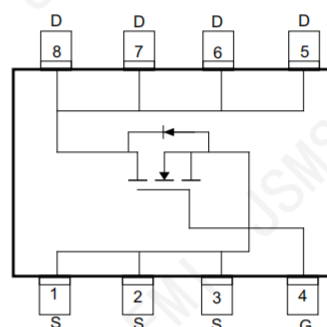
- Trench Power MOSFET technology
- Excellent package for heat dissipation
- High density cell design for low $R_{DS(ON)}$
- Moisture Sensitivity Level 1
- Epoxy Meets UL 94 V-0 Flammability Rating
- Halogen Free

Applications

- Power switching application
- Uninterruptible power supply
- DC-DC convertor
- Motor drivers



Top View



Absolute Maximum Ratings @ $T_A=25^{\circ}C$ unless otherwise noted

Symbol	Parameter		Typical	Unit
V _{DSS}	Drain-Source Voltage		30	V
V _{GSS}	Gate-Source Voltage		±20	V
I _D	Continuous Drain Current (T _A =25°C)	V _{GS} =10V	20	A
	Continuous Drain Current (T _A =70°C)		17	A
I _{DM}	Pulsed Drain Current		80	A
I _S	Continuous Source Current (Diode Conduction)		4.0	A
P _D	Power Dissipation	T _A =25°C	3.0	W
		T _A =70°C	2.1	
T _J	Operation Junction Temperature		150	°C
T _{STG}	Storage Temperature Range		-55~+150	°C
R _{θJA}	Thermal Resistance Junction to Ambient		85	°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

Ordering Information

Order number	Package	Marking	Operation Temperature Range	MSL Grade	Ship,Quantity	Green
DMN3007LSS-13-JSM	SOP-8	N3007LS	-55 to 150 $^{\circ}C$	1	T&R,3000	Rohs

Electrical Characteristics ($T_A=25^{\circ}\text{C}$ 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	30			V
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250uA	1.0	1.8	3.0	V
I _{GSS}	Gate Leakage Current	V _{DS} =0V, V _{GS} =±20V			±100	nA
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =24V, V _{GS} =0			1	uA
		V _{DS} =24V, V _{GS} =0 T _J =55℃			5	
R _{DS(ON)}	Drain-Source On-Resistance	V _{GS} =10V, I _D =20A		4	6	mΩ
		V _{GS} =4.5V, I _D =15A		6	10	
Source-Drain Diode						
V _{SD}	Diode Forward Voltage	I _S =1.0A, V _{GS} =0V		0.76	1.0	V
Dynamic Parameters						
Q _g	Total Gate Charge	V _{DS} =15V V _{GS} =4.5V I _D =20A		28.5	37	nC
Q _{gs}	Gate-Source Charge			8.1	10.5	
Q _{gd}	Gate-Drain Charge			12	15.6	
C _{iss}	Input Capacitance	V _{DS} =15V V _{GS} =0V f=1MHz		1724		pF
C _{oss}	Output Capacitance			456		
C _{rss}	Reverse Transfer Capacitance			329		
T _{d(on)}	Turn-On Time	V _{DS} =15V I _D =20A		19	38	nS
T _r				9.44	18.88	
T _{d(off)}	Turn-Off Time	V _{GEN} =10V R _G =3Ω		58.84	117.68	
T _f				8.68	117.36	

Note: 1. Pulse test: pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$

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

Typical Electrical and Thermal Characteristics Diagrams

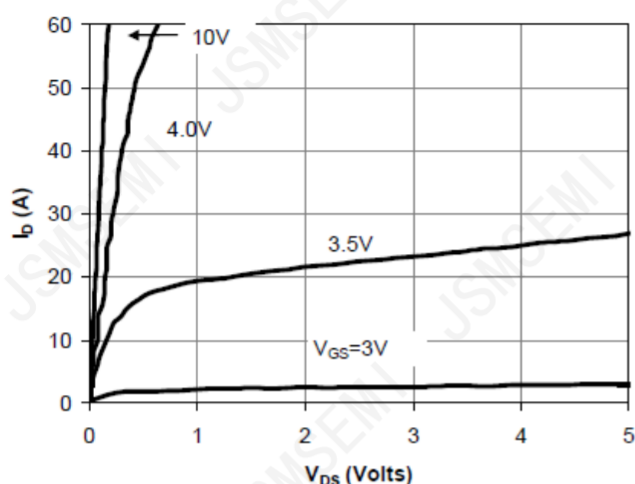


Figure 1: On-Region Characteristics

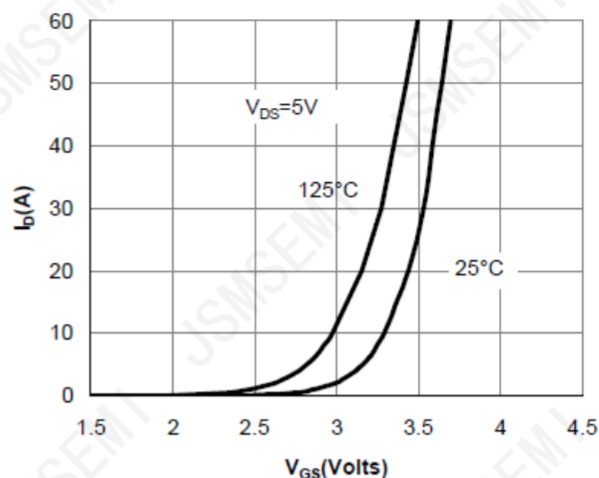


Figure 2: Transfer Characteristics

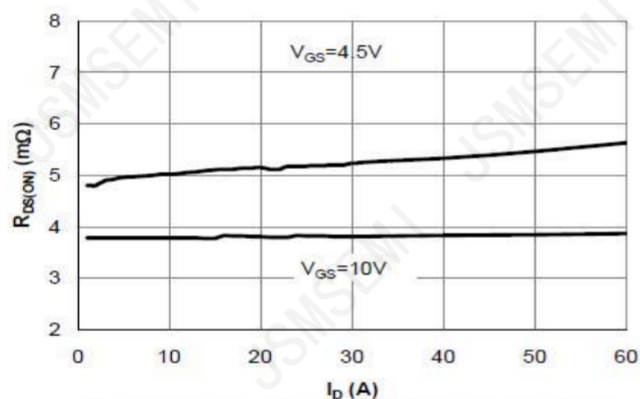


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

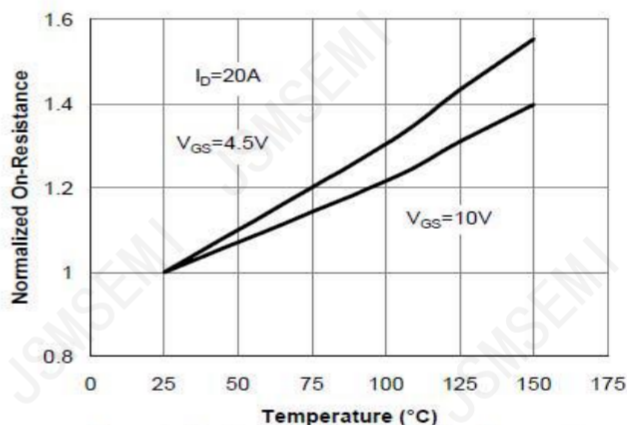


Figure 4: On-Resistance vs. Junction Temperature

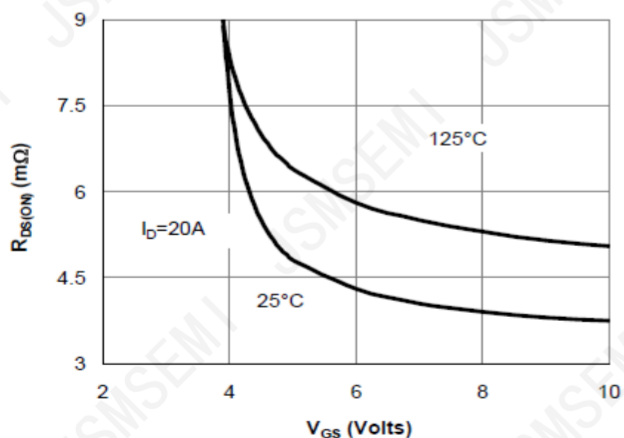


Figure 5: On-Resistance vs. Gate-Source Voltage

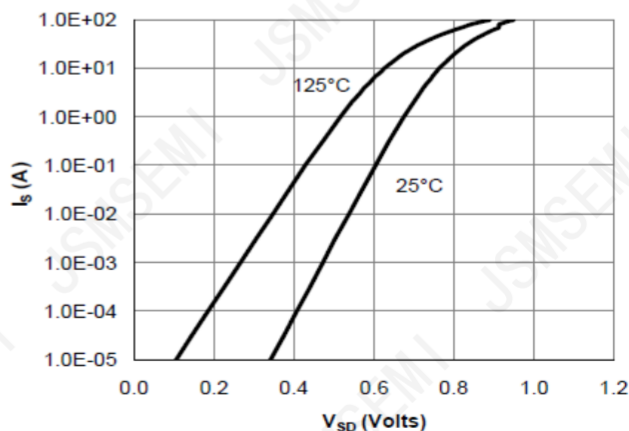


Figure 6: Body-Diode Characteristics

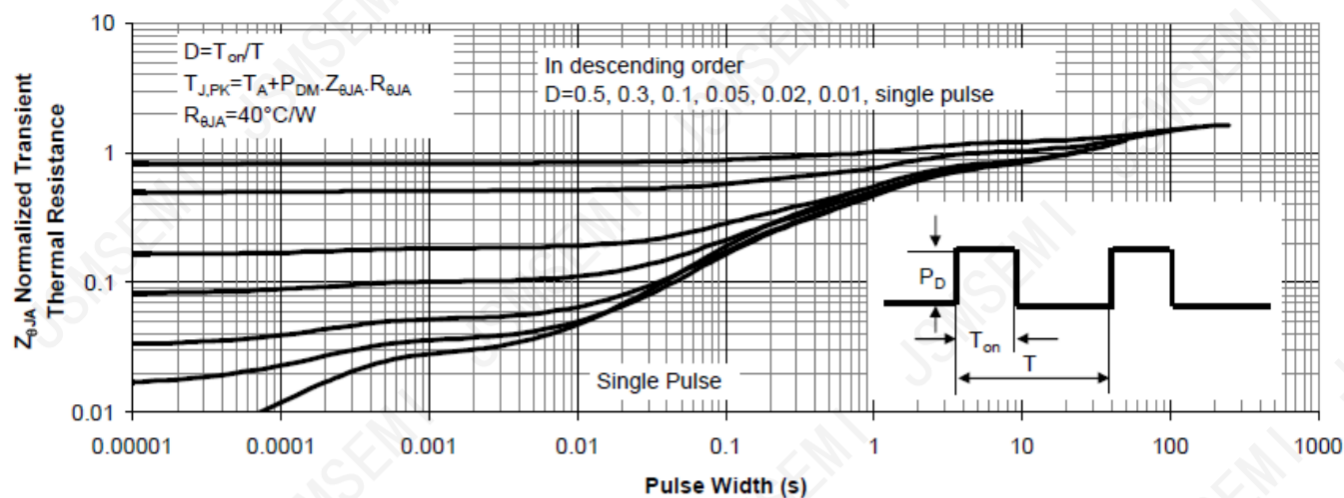
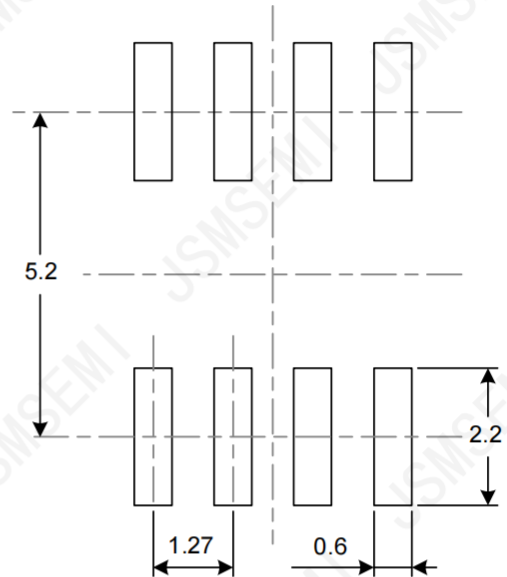
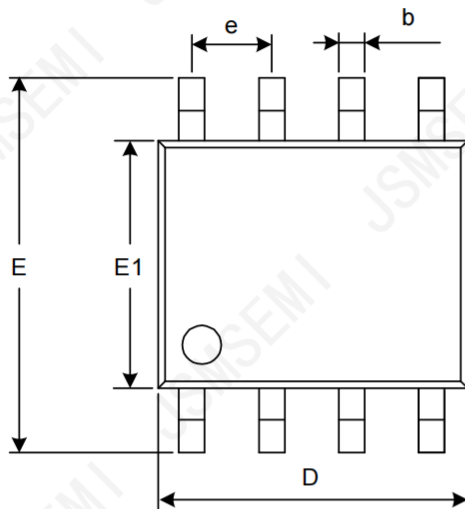


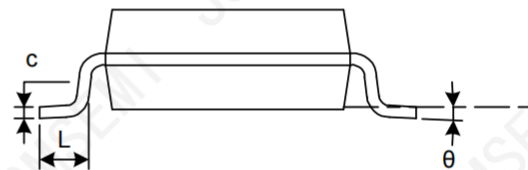
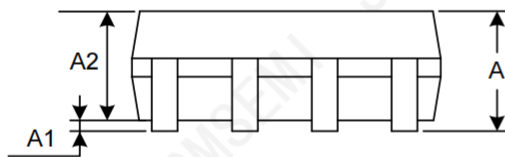
Figure 7 : Normalized Maximum Transient Thermal Impedance

Package Information

SOIC-8



RECOMMENDED LAND PATTERN (Unit: mm)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.007	0.010
D	4.800	5.000	0.189	0.197
e	1.270 (BSC)		0.050 (BSC)	
E	5.800	6.200	0.228	0.244
E1	3.800	4.000	0.150	0.157
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°

Revision History

Rev.	Change	Date
V1.0	Initial version	2/27/2020

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