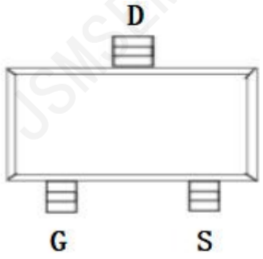
Description

These miniature surface mount MOSFETs reduce power loss conserve energy, making this device ideal for use in small power management circuitry.

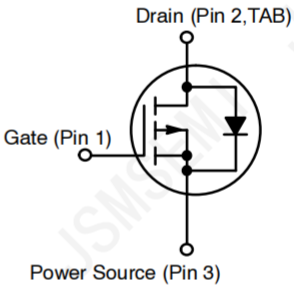
General Features

- V_{DS} = -30V, I_D = -4.1A
  $R_{DS(ON)}$ <49 mΩ @V_{GS}=-10V
  $R_{DS(ON)}$ <65mΩ @V_{GS}=-4.5V
- High Power and current handing capability
- Lead free product is acquired
- Surface Mount Package



Application

- PWM applications
- Load switch
- Power management
- Video monitor



Absolute Maximum Ratings (TA=25℃ unless otherwise noted)

Symbol	Parameter	Value	Units
V_{DSS}	Drain-Source Voltage	-30	V
I_D	Drain Current - Continuous (T_C = 25℃)	-4.1	A
	- Continuous (T_C = 70℃)	-3.2	A
I_{DM}	Drain Current - Pulsed (Note 1)	-15	A
V_{GSS}	Gate-Source Voltage	±20	V
P_D	Power Dissipation (T_C = 25℃)	1.2	W
T_J , T_{STG}	Operating and Storage Temperature Range	-55 to +150	℃
T_L	Maximum lead temperature for soldering purposes, 1/8" from case for 5 seconds	300	℃

Thermal Characteristic

Thermal Resistance Junction-to-Ambient	$R_{\theta JA}$（≤ 5 s ）	-	℃/W
	$R_{\theta JA}$（Steady-State）	105	℃/W
Maximum junction-to-ambient	RθJC	-	℃/W

Electrical Characteristics (TA=25℃ unless otherwise noted)

Symbol	Parameter	Limit	Min	Typ	Max	Unit
STATIC						
V(BR) DSS	Drain-source breakdown voltage	VGS =0V, ID =-250μ A	-30			V
VGS(th)	Gate threshold voltage	VDS =VGS, ID =-250μ A	-1	-1.5	-2.4	V
IGSS	Gate-source leakage current	VDS =0V, VGS = ± 20V			±100	nA
IDSS	Zero gate voltage drain current	VDS =-30V, VGS =0V			-1	uA
RDS(ON)	Drain-source on-resistance	VGS =-10V, ID = -4.1A		36	49	mΩ
		VGS =-4.5V, ID = -3.5A		52	65	
DYNAMIC	PARAMETERS					
Qg	Total Gate Charge	VDS =-15V, VGS =-10V, ID =-4.1A(Note 2)		11.65		nC
Qgs	Gate- Source Charge			2.32		
Qgd	Gate- Drain Charge			2.08		
Ciss	Input capacitance	VDS =-15V, VGS =0V, f= 1 MHz		572		nF
Coss	Output Capacitance			82		
Crss	Reverse Transfer Capacitance			70		
Rg	Gate Resistance	f= 1 MHz		-		Ω
td(on)	Turn- On Delay Time	VDD =-15V, VGEN=-10V ID =-3.5A, RG =2.5Ω(Note 2)		3.8		ns
tr	Rise Time			17.6		
td(off)	Turn- Off Delay Time			17.8		
tf	Fall Time			21.8		
IS	Maximum Continuous Drain-Source Diode Forward Current		-	-	-4.1	V
ISM	Maximum Pulsed Drain-Source Diode Forward Current		-	-	-16	A
VSD	Drain to Source Diode Forward Voltage, V GS = 0V, I SD =-4.1A, T J = 25℃		-	-	-1.2	V

Notes:
1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
2. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%

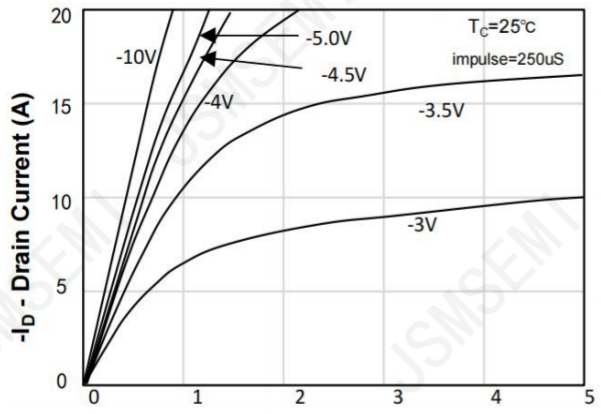


Figure 1. On-Region Characteristics

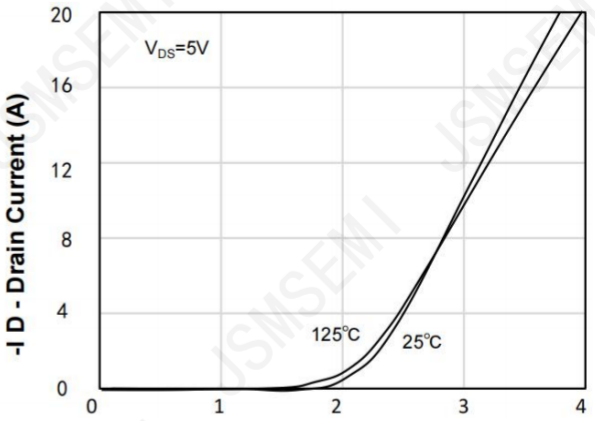


Figure 2. Transfer Characteristics

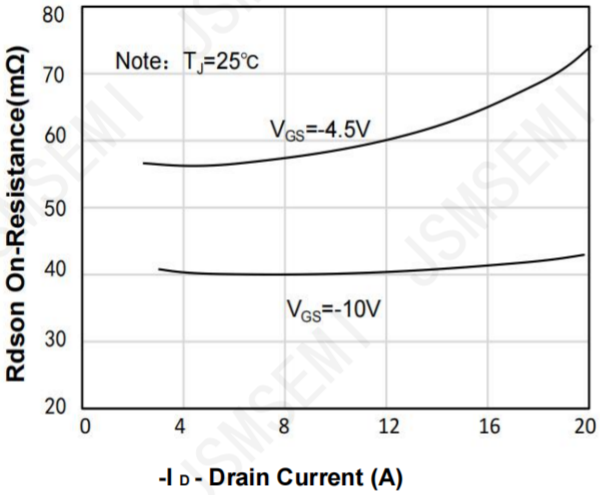


Figure 3. On-Resistance Variation vs Drain Current and Gate Voltage

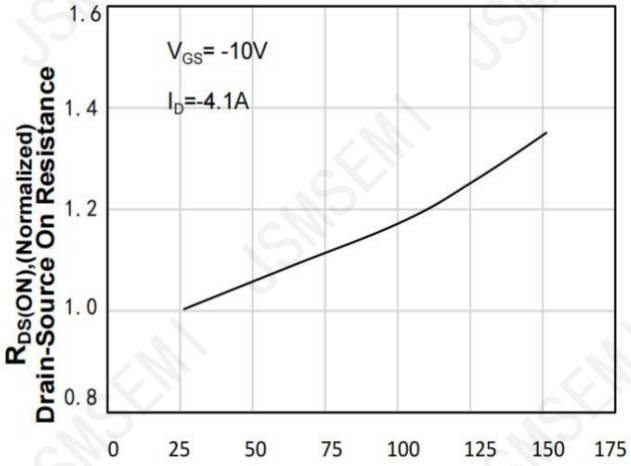


Figure 4. On-Resistance Variation vs Temperature

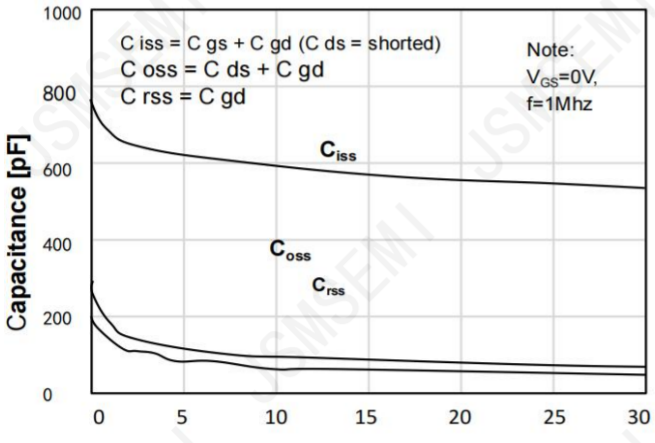


Figure 5. Capacitance Characteristics

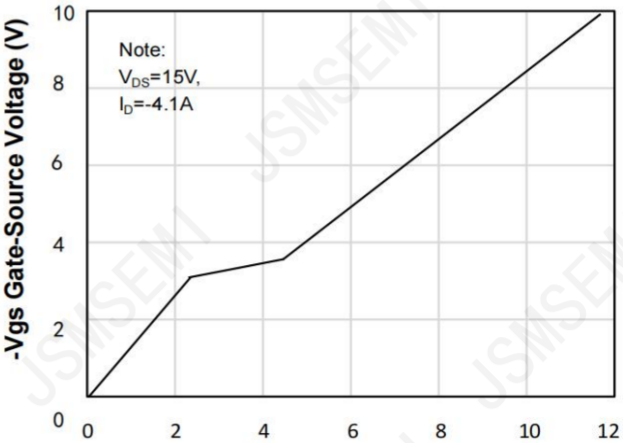


Figure 6. Gate Charge Characteristics

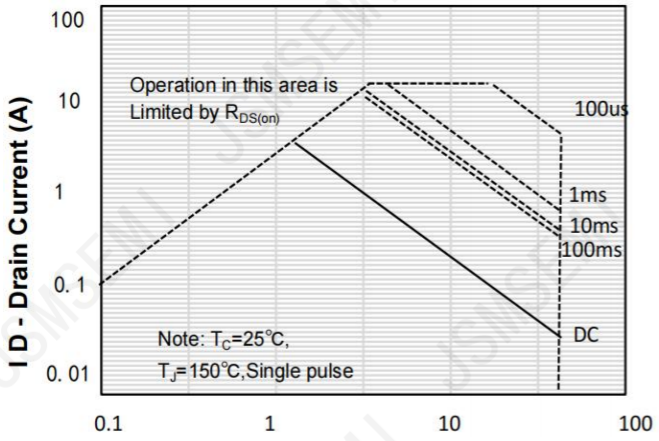


Figure 7. Maximum Safe Operating Area

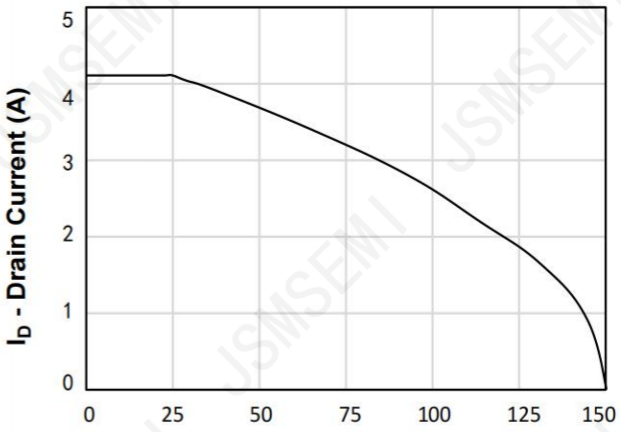


Figure 8. Maximum Continuous Drain Current vs Temperature

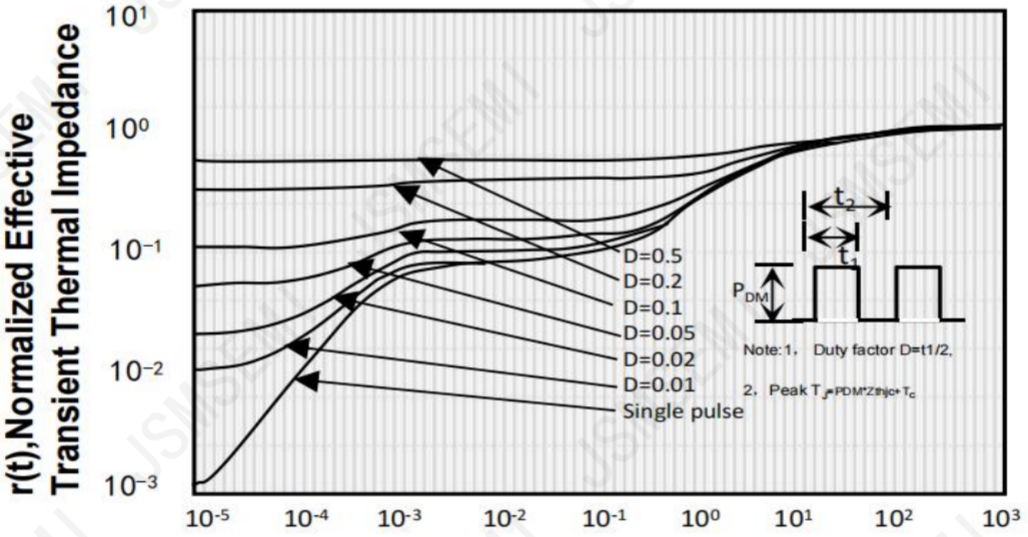
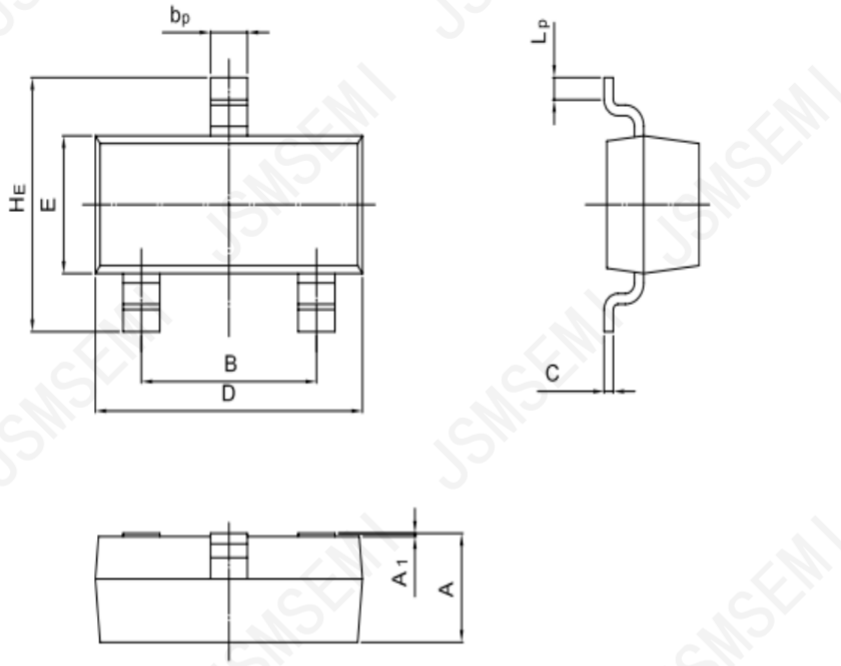


Figure 9. Transient Thermal Response Curve

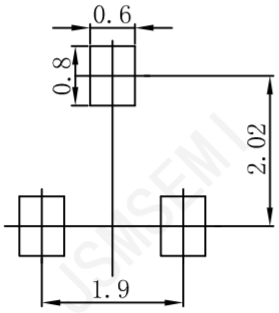
Package Information

SOT-23



UNIT	A	B	bp	C	D	E	HE	A1	Lp
mm	1.40 0.95	2.04 1.78	0.50 0.35	0.19 0.08	3.10 2.70	1.65 1.20	3.00 2.20	0.100 0.013	0.50 0.20

SOT-23 Suggested Pad Layout



Note:
1.Controlling dimension:in millimeters.
2.General tolerance:± 0.05mm.
3.The pad layout is for reference purposes only.

Revision History

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

Important Notice

JSMSEMI Semiconductor (JSMSEMI) PRODUCTS ARE NEITHER DESIGNED NOR INTENDED FOR USE IN MILITARY AND/OR AEROSPACE, AUTOMOTIVE OR MEDICAL DEVICES OR SYSTEMS UNLESS THE SPECIFIC JSMSEMI PRODUCTS ARE SPECIFICALLY DESIGNATED BY JSMSEMI FOR SUCH USE. BUYERS ACKNOWLEDGE AND AGREE THAT ANY SUCH USE OF JSMSEMI PRODUCTS WHICH JSMSEMI HAS NOT DESIGNATED FOR USE IN MILITARY AND/OR AEROSPACE, AUTOMOTIVE OR MEDICAL DEVICES OR SYSTEMS IS SOLELY AT THE BUYER' S RISK.

JSMSEMI assumes no liability for application assistance or customer product design. Customers are responsible for their products and applications using JSMSEMI products.

Resale of JSMSEMI products or services with statements diferent from or beyond the parameters stated by JSMSEMI for that product or service voids all express and any implied warranties for the associated JSMSEMI product or s ervice. JSMSEMI is not responsible or liable for any such statements.

Any and all information described or contained herein are subject to change without notice due to product/technology improvement, etc.When designing equipment, refer to the "Delivery Specification" for the JSMSEMI product that you intend to use.

For additional information please contact Kevin@jsmsemi.com or visit www.jsmsemi.com