



## Description

The DMP3018SSS-13 uses advanced trench technology to provide excellent  $R_{DS(ON)}$ , low gate charge and operation with gate voltages as low as 4.5V. This device is suitable for use as a Battery protection or in other Switching application.



SOP-8

## General Features

$V_{DS} = -30V$   $I_D = -15A$

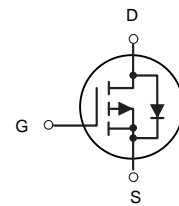
$R_{DS(ON)} < 10m\Omega @ V_{GS} = -10V$

## Application

Battery protection

Load switch

Uninterruptible power supply



P-Channel MOSFET

## Ordering Information

Product ID	Pack	Brand	Qty(PCS)
DMP3018SSS-13	SOP-8	HXY MOSFET	3000

## Absolute Maximum Ratings ( $T_c=25^\circ C$ unless otherwise noted )

Symbol	Parameter	Rating	Units
$V_{DS}$	Drain-Source Voltage	-30	V
$V_{GS}$	Gate-Source Voltage	$\pm 20$	V
$I_D @ T_A = 25^\circ C$	Drain Current <sup>3</sup> , $V_{GS} @ 10V$	-15	A
$I_D @ T_A = 70^\circ C$	Drain Current <sup>3</sup> , $V_{GS} @ 10V$	-10	A
$I_{DM}$	Pulsed Drain Current <sup>1</sup>	-60	A
$P_D @ T_A = 25^\circ C$	Total Power Dissipation	25.6	W
$T_{STG}$	Storage Temperature Range	-55 to 150	$^\circ C$
$T_J$	Operating Junction Temperature Range	-55 to 150	$^\circ C$
$R_{thj-c}$	Maximum Thermal Resistance, Junction-ambient <sup>3</sup>	4.9	$^\circ C/W$



**Electrical Characteristics@T<sub>j</sub>=25°C(unless otherwise specified)**

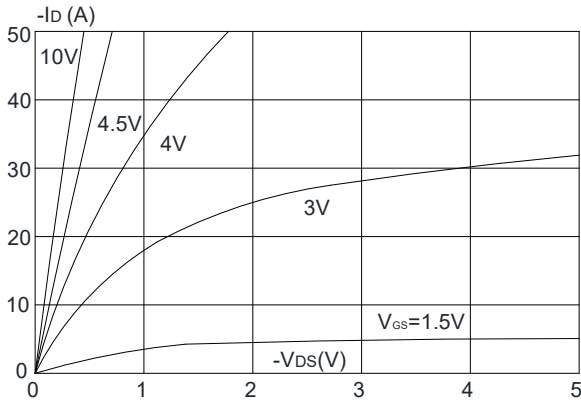
Symbol	Parameter	Conditions	Min	Typ	Max	Units
<b>BV<sub>DSS</sub></b>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V, I <sub>D</sub> =250μA	-30	---	---	V
<b>I<sub>DSS</sub></b>	Zero Gate Voltage Drain Current	V <sub>GS</sub> =0V, V <sub>DS</sub> =-30V,	---	---	-1	μA
<b>I<sub>GSS</sub></b>	Gate-Source Leakage Current	V <sub>GS</sub> =±20V, V <sub>DS</sub> =0A	---	---	±100	nA
<b>V<sub>GS(th)</sub></b>	GATE-Source Threshold Voltage	V <sub>GS</sub> =V <sub>DS</sub> , I <sub>D</sub> =250μA	-1	-1.6	-2.5	V
<b>R<sub>DS(on)</sub></b>	Drain-Source On Resistance	V <sub>GS</sub> =-10V, I <sub>D</sub> =-8A	---	7.5	10	mΩ
		V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-6A	---	11.6	16	
<b>C<sub>iss</sub></b>	Input Capacitance	V <sub>DS</sub> =-15V, V <sub>GS</sub> =0V, f=1MHz	---	3550	---	pF
<b>C<sub>oss</sub></b>	Output Capacitance		---	400	---	
<b>C<sub>rss</sub></b>	Reverse Transfer Capacitance		---	360	---	
<b>t<sub>d(on)</sub></b>	Turn-On Delay Time <sup>3,4</sup>	V <sub>DD</sub> =-15V, V <sub>GS</sub> =-10V I <sub>D</sub> =-20A, R <sub>GEN</sub> =2.5 Ω	---	14	---	ns
<b>t<sub>r</sub></b>	Rise Time <sup>3,4</sup>		---	19	---	ns
<b>t<sub>d(off)</sub></b>	Turn-Off Delay Time <sup>3,4</sup>		---	65	---	ns
<b>t<sub>f</sub></b>	Fall Time <sup>3,4</sup>		---	50	---	ns
<b>Q<sub>g</sub></b>	Total Gate Charge <sup>3,4</sup>	V <sub>DS</sub> =-15V, V <sub>GS</sub> =-10V, I <sub>D</sub> =-20A	---	35	---	nC
<b>Q<sub>gs</sub></b>	Gate-Source Charge <sup>3,4</sup>		---	6.2	---	nC
<b>Q<sub>gd</sub></b>	Gate-Drain "Miller" Charge <sup>3,4</sup>		---	9.2	---	nC
<b>I<sub>S</sub></b>	Continuous Source Current	V <sub>G</sub> =V <sub>D</sub> =0V, Force Current	---	---	-40	A
<b>I<sub>SM</sub></b>	Pulsed Source Current		---	---	-160	A
<b>V<sub>SD</sub></b>	Diode Forward Voltage	V <sub>GS</sub> =0V, I <sub>S</sub> =-30A	---	-0.8	-1.2	V

**Notes:**

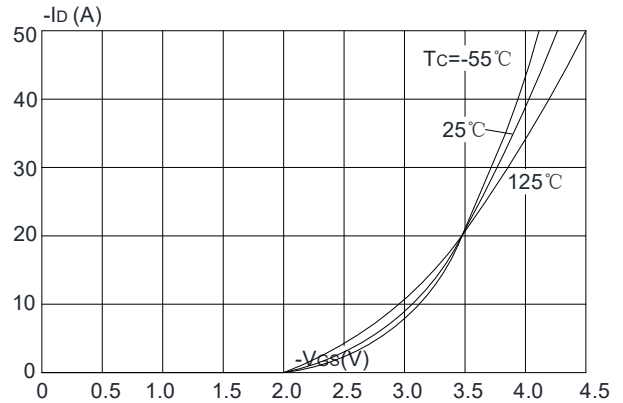
1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
2. EAS condition: T<sub>J</sub>=25°C, V<sub>DD</sub>=-15V, V<sub>G</sub>=-10V, L=0.5mH, R<sub>G</sub>=25Ω, I<sub>AS</sub>=-22A
3. Pulse Test: Pulse Width≤300μs, Duty Cycle≤2%



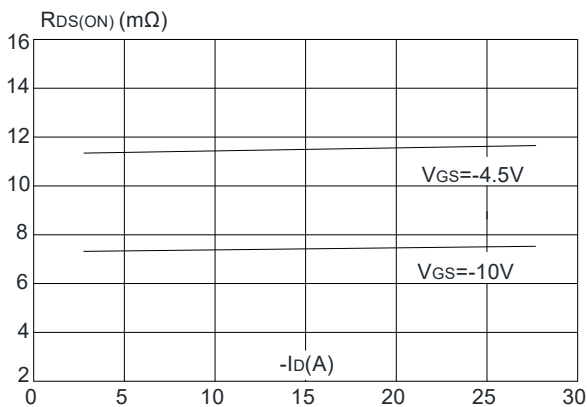
**Typical Characteristics: (Tc=25°C unless otherwise noted)**



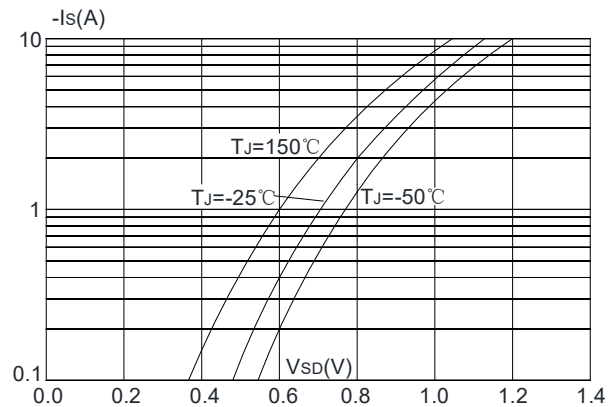
**Figure 1:** Output Characteristics



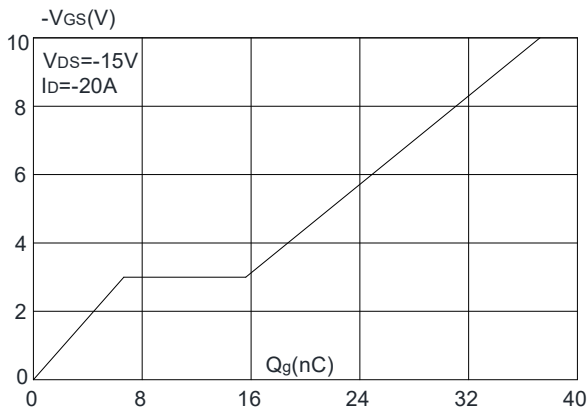
**Figure 2:** Typical Transfer Characteristics



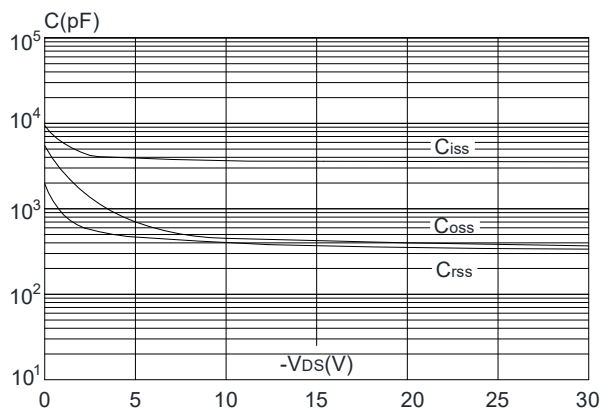
**Figure 3:** On-resistance vs. Drain Current



**Figure 4:** Body Diode Characteristics



**Figure 5:** Gate Charge Characteristics



**Figure 6:** Capacitance Characteristics

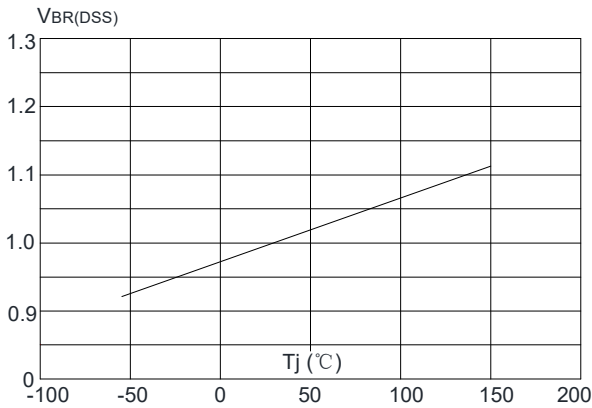


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

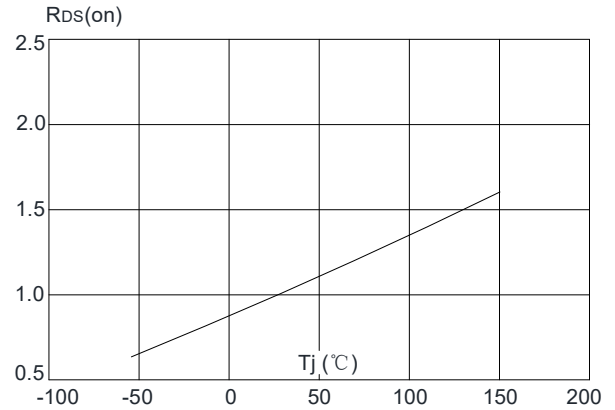


Figure 8: Normalized on Resistance vs. Junction Temperature

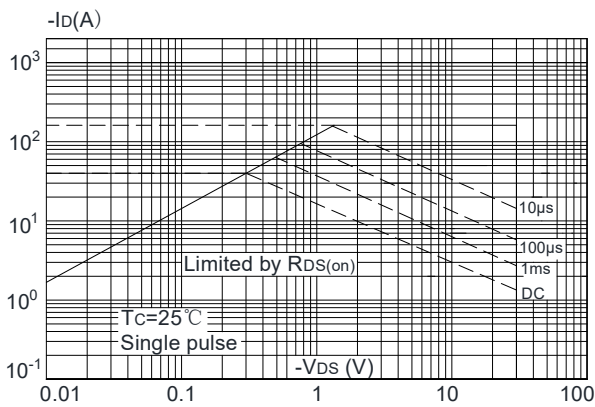


Figure 9: Maximum Safe Operating Area

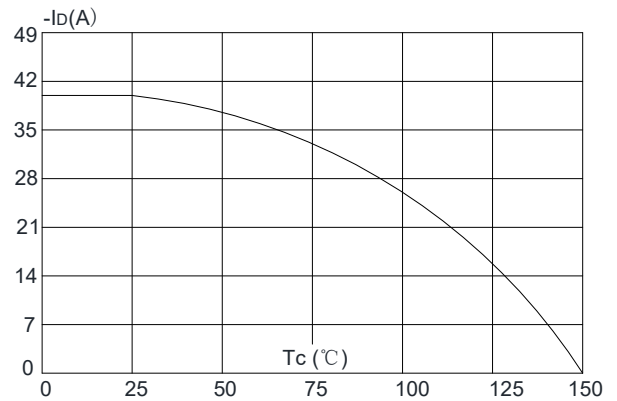


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

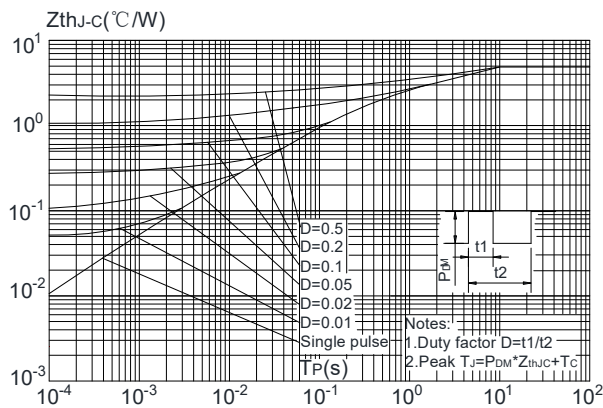


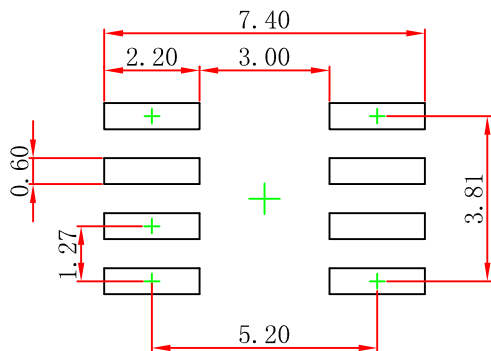
Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case



### SOP-8 Package Outline Dimensions



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°



- Note:
1. Controlling dimension: in millimeters.
  2. General tolerance:  $\pm 0.05\text{mm}$ .
  3. The pad layout is for reference purposes only.



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