



Description

The DMP3056LSS uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 2.5V. This device is suitable for use as a Battery protection or in other Switching application.

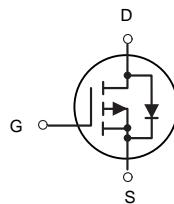


SOP-8

General Features

$V_{DS} = -30V$ $I_D = -9A$

$R_{DS(ON)} < 20m\Omega$ @ $V_{GS}=10V$



P-Channel MOSFET

Application

Battery protection

Load switch

Uninterruptible power supply

Package Marking and Ordering Information

Product ID	Pack	Brand	Qty(PCS)
DMP3056LSS	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	+ 20	V
$I_D @ T_A=25^\circ C$	Drain Current ³ , $V_{GS} @ 10V$	-9	A
$I_D @ T_A=70^\circ C$	Drain Current ³ , $V_{GS} @ 10V$	-7.3	A
IDM	Pulsed Drain Current ¹	-50	A
$P_D @ T_A=25^\circ C$	Total Power Dissipation	2.5	W
	Linear Derating Factor	0.02	W/ $^\circ C$
TSTG	Storage Temperature Range	-55 to 150	$^\circ C$
T_J	Operating Junction Temperature Range	-55 to 150	$^\circ C$
R_{thj-a}	Maximum Thermal Resistance, Junction-ambient ³	50	$^\circ C/W$



Electrical Characteristics @ $T_j=25^\circ\text{C}$ (unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
BV_{DSS}	Drain-Source Breakdown Voltage	$\text{V}_{\text{GS}}=0\text{V}$, $\text{I}_{\text{D}}=-250\text{uA}$	-30	-	-	V
$\text{RDS}(\text{ON})$	Static Drain-Source On-Resistance ²	$\text{V}_{\text{GS}}=-10\text{V}$, $\text{I}_{\text{D}}=-7\text{A}$	-	18	20	$\text{m}\Omega$
		$\text{V}_{\text{GS}}=-4.5\text{V}$, $\text{I}_{\text{D}}=-5\text{A}$	-	32	36	$\text{m}\Omega$
$\text{V}_{\text{GS}(\text{th})}$	Gate Threshold Voltage	$\text{V}_{\text{DS}}=\text{V}_{\text{GS}}$, $\text{I}_{\text{D}}=-250\text{uA}$	-1	-	-3	V
g_{fs}	Forward Transconductance	$\text{V}_{\text{DS}}=-10\text{V}$, $\text{I}_{\text{D}}=-7\text{A}$	-	16	-	S
I_{DSS}	Drain-Source Leakage Current	$\text{V}_{\text{DS}}=-24\text{V}$, $\text{V}_{\text{GS}}=0\text{V}$	-	-	-30	uA
I_{GSS}	Gate-Source Leakage	$\text{V}_{\text{GS}}=\pm 20\text{V}$, $\text{V}_{\text{DS}}=0\text{V}$	-	-	± 100	nA
Q_{g}	Total Gate Charge	$\text{I}_{\text{D}}=-7\text{A}$	-	18	29	nC
Q_{gs}	Gate-Source Charge	$\text{V}_{\text{DS}}=-24\text{V}$	-	3	-	nC
Q_{gd}	Gate-Drain ("Miller") Charge	$\text{V}_{\text{GS}}=-4.5\text{V}$	-	10	-	nC
$\text{t}_{\text{d}(\text{on})}$	Turn-on Delay Time	$\text{V}_{\text{DS}}=-15\text{V}$	-	8	-	ns
t_{r}	Rise Time	$\text{I}_{\text{D}}=-1\text{A}$	-	6.6	-	ns
$\text{t}_{\text{d}(\text{off})}$	Turn-off Delay Time	$\text{R}_{\text{G}}=3.3\Omega$	-	44	-	ns
t_{f}	Fall Time	$\text{V}_{\text{GS}}=-10\text{V}$	-	34	-	ns
C_{iss}	Input Capacitance	$\text{V}_{\text{GS}}=0\text{V}$	-	1175	1690	pF
C_{oss}	Output Capacitance	$\text{V}_{\text{DS}}=-25\text{V}$	-	195	-	pF
C_{rss}	Reverse Transfer Capacitance	$f=1.0\text{MHz}$	-	190	-	pF
V_{SD}	Forward On Voltage ²	$\text{I}_{\text{S}}=-2.1\text{A}$, $\text{V}_{\text{GS}}=0\text{V}$	-	-	-1.2	V
trr	Reverse Recovery Time	$\text{I}_{\text{S}}=-7\text{A}$, $\text{V}_{\text{GS}}=0\text{V}$, $\text{dI}/\text{dt}=100\text{A}/\mu\text{s}$	-	28	-	ns
Q_{rr}	Reverse Recovery Charge		-	18	-	nC

Notes:

- 1.Pulse width limited by Max. junction temperature.
- 2.Pulse test
- 3.Surface mounted on 1 in² copper pad of FR4 board, $t \leq 10\text{sec}$; $125^\circ\text{C}/\text{W}$ when mounted on Min. cop



Typical Electrical and Thermal Characteristics (Curves)

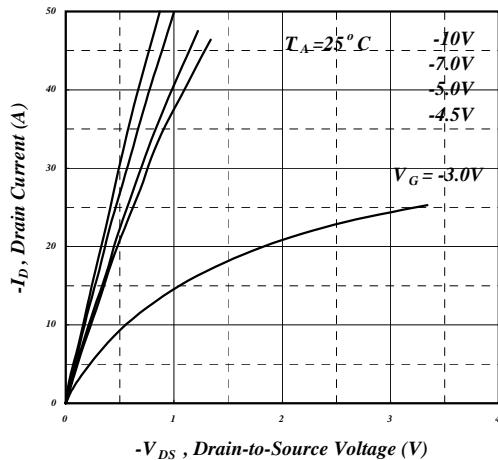


Fig 1. Typical Output Characteristics

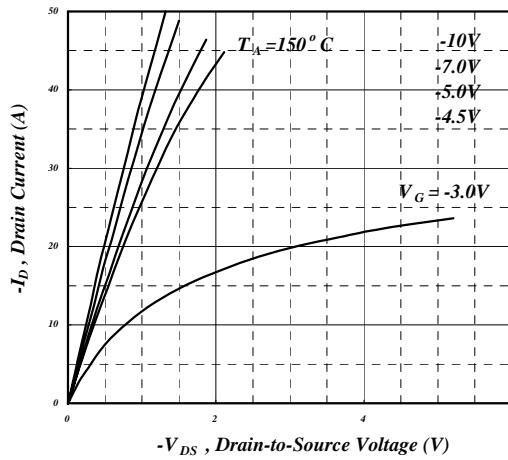


Fig 2. Typical Output Characteristics

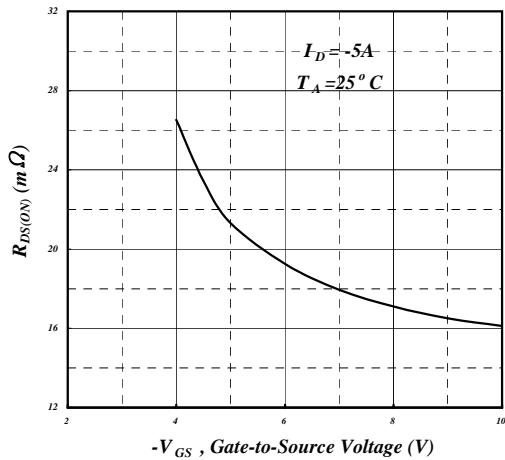


Fig 3. On-Resistance v.s. Gate Voltage

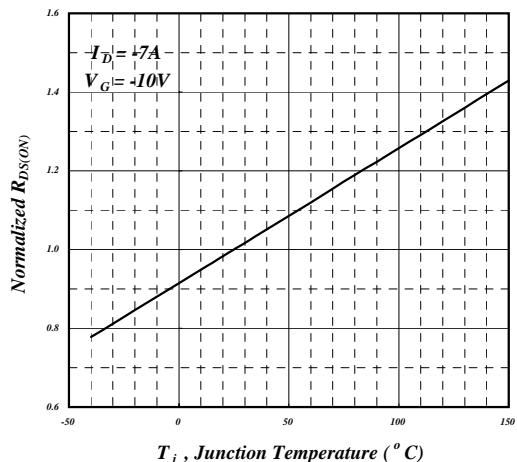


Fig 4. Normalized On-Resistance v.s. Junction Temperature

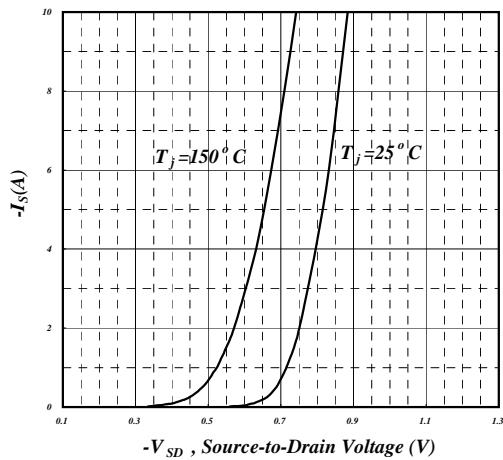


Fig 5. Forward Characteristic of Reverse Diode

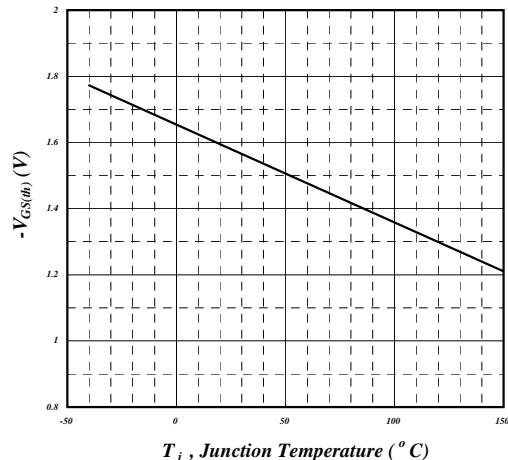
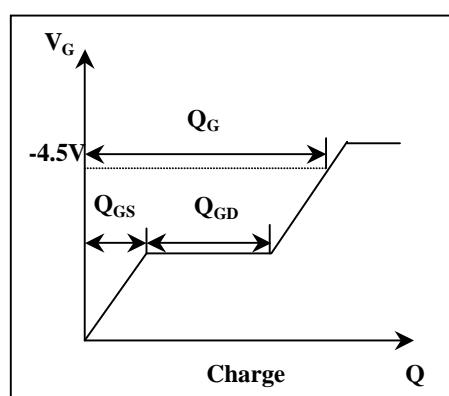
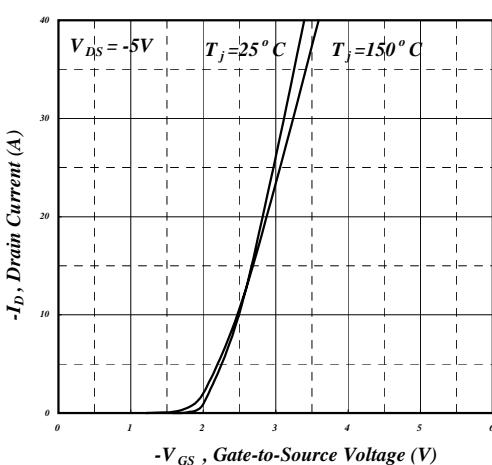
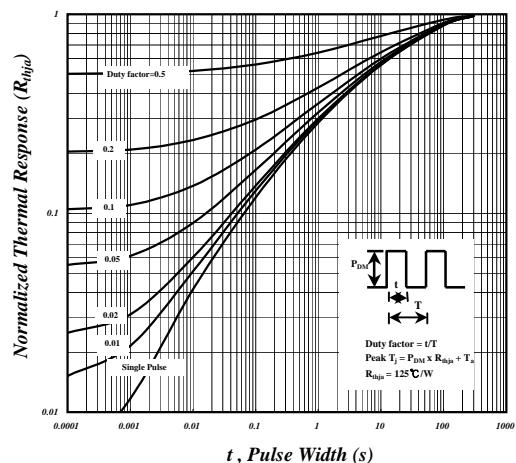
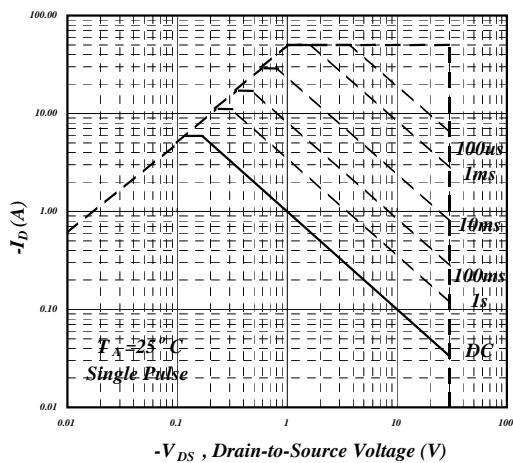
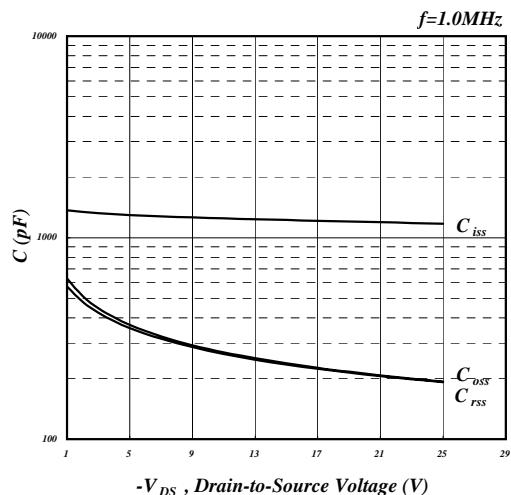
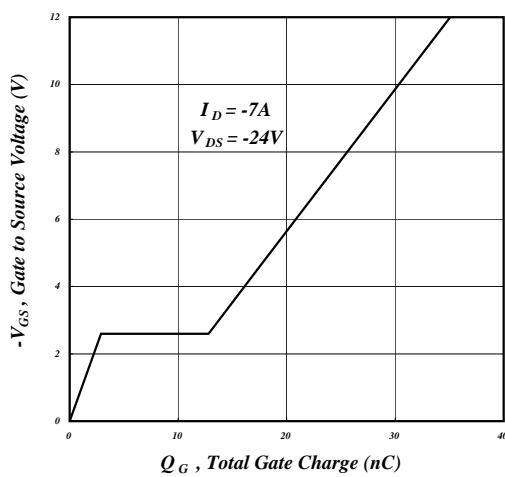
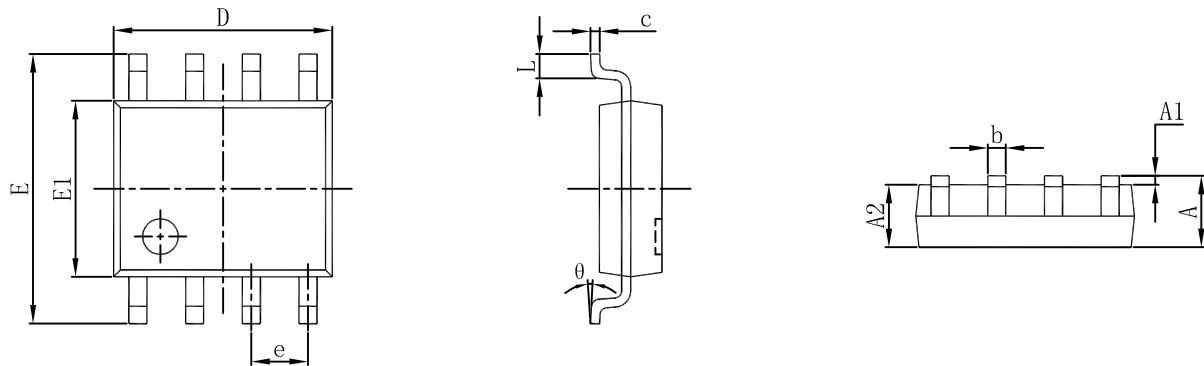


Fig 6. Gate Threshold Voltage v.s. Junction Temperature

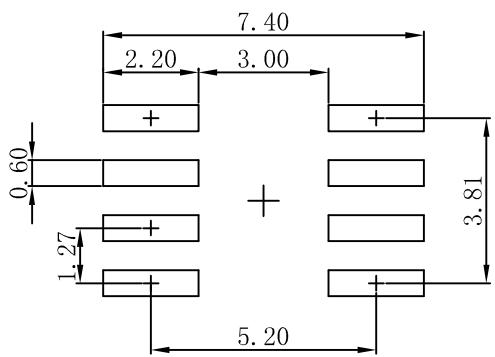




SOP-8 Package Outline Dimensions



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: ± 0.05 mm.
3. The pad layout is for reference purposes only.



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