



## Description

The DMG1012T-7 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.

## General Features

$V_{DS} = 20V$   $I_D = 0.8A$

$R_{DS(ON)} < 250\text{ m}\Omega @ V_{GS}=4.5V$

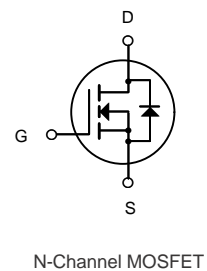
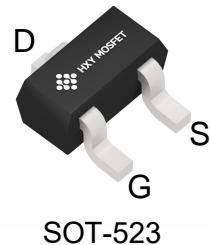
$R_{DS(ON)} < 360\text{ m}\Omega @ V_{GS}=2.5V$

## Application

Battery protection

Load switch

Uninterruptible power supply



N-Channel MOSFET

## Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
DMG1012T-7	SOT-523	34K	3000

## Absolute Maximum Ratings ( $T_A=25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Limit	Unit
$V_{DS}$	Drain-Source Voltage	20	V
$V_{GS}$	Gate-Source Voltage	$\pm 8$	V
$I_D$	Drain Current-Continuous	0.8	A
$P_D$	Maximum Power Dissipation	0.15	W
$T_J, T_{STG}$	Operating Junction and Storage Temperature Range	-55 To 150	$^\circ\text{C}$
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient (Note 2)	850	$^\circ\text{C/W}$



**Electrical Characteristics ( $T_J=25\text{ }^{\circ}\text{C}$ , unless otherwise noted)**

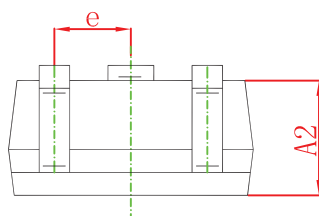
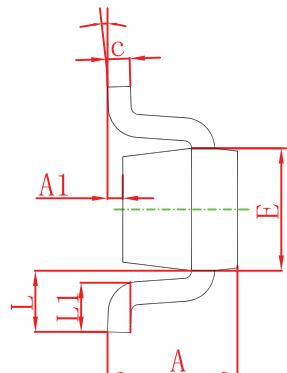
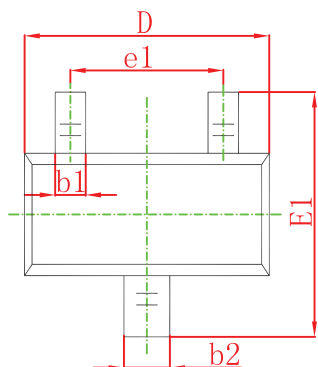
Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
STATIC CHARACTERISTICE						
Drain-source breakdown voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> =250μA	20			V
Zero gate voltage drain current	I <sub>DSS</sub>	V <sub>DS</sub> =20V,V <sub>GS</sub> = 0V			1	μA
Gate-body leakage current	I <sub>GSS</sub>	V <sub>GS</sub> =±8V, V <sub>DS</sub> = 0V			±10	μA
Gate threshold voltage <small>(note2)</small>	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	0.5	0.7	1.0	V
Drain-source on-resistance <small>(note2)</small>	R <sub>DS(on)</sub>	V <sub>GS</sub> =4.5V, I <sub>D</sub> =0.5A		0.18	0.25	Ω
		V <sub>GS</sub> =2.5V, I <sub>D</sub> =0.5A		0.27	0.36	Ω
Maximum Continuous Drain to Source Diode Forward Current	I <sub>S</sub>	--			0.8	A
Maximum Pulsed Drain to Source Diode Forward Current	I <sub>SM</sub>	--			1.2	A
Diode forward voltage	V <sub>SD</sub>	I <sub>S</sub> =0.5A, V <sub>GS</sub> =0V			1.2	V
DYNAMIC CHARACTERISTICS <small>(note4)</small>						
Input capacitance	C <sub>iss</sub>	V <sub>DS</sub> =16V,V <sub>GS</sub> =0V, f =1MHz		50		pF
Output capacitance	C <sub>Oss</sub>			7		pF
Reverse transfer capacitance	C <sub>rss</sub>			4.5		pF
SWITCHING CHARACTERISTICS <small>(note4)</small>						
Turn-on delay time <small>(note3)</small>	t <sub>d(on)</sub>	V <sub>GS</sub> =4.5V,V <sub>DS</sub> =10V, R <sub>L</sub> =10Ω		2		nS
Turn-on rise time <small>(note3)</small>	t <sub>r</sub>			32		nS
Turn-off delay time <small>(note3)</small>	t <sub>d(off)</sub>			47		nS
Turn-off fall time <small>(note3)</small>	t <sub>f</sub>			22		nS

Notes:

1. Surface mounted on FR4 board using the minimum recommended pad size.
2. Pulse Test : Pulse Width=300 $\mu s$ , Duty Cycle=2%.
3. Switching characteristics are independent of operating junction temperatures.
4. Guaranteed by design, not subject to producing.

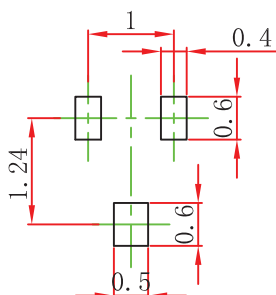


## SOT-523 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.700	0.900	0.028	0.035
A1	0.000	0.100	0.000	0.004
A2	0.700	0.800	0.028	0.031
b1	0.150	0.250	0.006	0.010
b2	0.250	0.350	0.010	0.014
c	0.100	0.200	0.004	0.008
D	1.500	1.700	0.059	0.067
E	0.700	0.900	0.028	0.035
E1	1.450	1.750	0.057	0.069
e	0.500 TYP.		0.020 TYP.	
e1	0.900	1.100	0.035	0.043
L	0.400 REF.		0.016 REF.	
L1	0.260	0.460	0.010	0.018
θ	0°	8°	0°	8°

## SOT-523 Suggested Pad Layout



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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