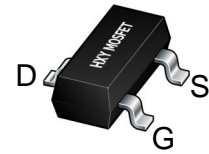




## Description

The DMP21D0UT 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.



SOT-523

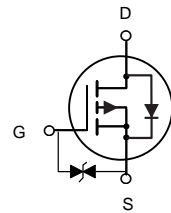
## General Features

$V_{DS} = -20V$   $I_D = -0.66A$

$R_{DS(ON)} < 560\text{ m}\Omega @ V_{GS} = -4.5V$

$R_{DS(ON)} < 780\text{ m}\Omega @ V_{GS} = -2.5V$

ESD Rating: 1500V HBM



P-Channel MOSFET

## Application

Battery protection

Load switch

Uninterruptible power supply

## Package Marking and Ordering Information

Product ID	Pack	Brand	Qty(PCS)
DMP21D0UT	SOT-523	HXY MOSFET	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	$\pm 12$	V
$I_D$	Drain Current-Continuous	-0.66	A
$P_D$	Maximum Power Dissipation	150	mW
$T_J, T_{STG}$	Operating Junction and Storage Temperature Range	-55 To 150	$^\circ\text{C}$
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient <sup>(Note 2)</sup>	833	$^\circ\text{C/W}$



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

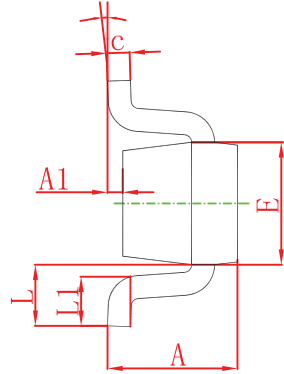
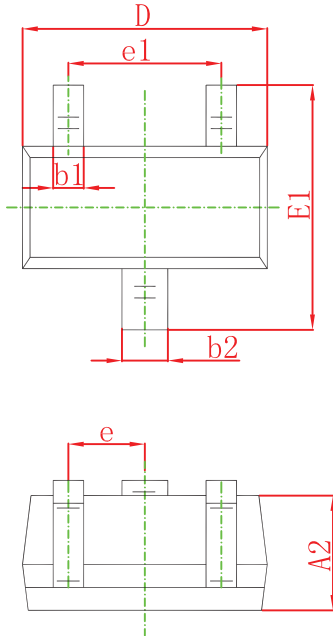
Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
<b>STATIC CHARACTERISTICE</b>						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = -250\mu A$	-20			V
Zero gate voltage drain current	$I_{DSS}$	$V_{DS} = -20V, V_{GS} = 0V$			-1	$\mu A$
Gate-body leakage current	$I_{GSS}$	$V_{GS} = \pm 10V, V_{DS} = 0V$			$\pm 10$	$\mu A$
Gate threshold voltage (note2)	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\mu A$	-0.4	-0.7	-1.0	V
Drain-source on-resistance (note2)	$R_{DS(on)}$	$V_{GS} = -4.5V, I_D = -0.5A$			0.56	$\Omega$
		$V_{GS} = -2.5V, I_D = -0.2A$			0.78	$\Omega$
Maximum Continuous Drain to Source Diode Forward Current	$I_S$	--			-0.6	A
Maximum Pulsed Drain to Source Diode Forward Current	$I_{SM}$	--			-1.2	A
Diode forward voltage	$V_{SD}$	$I_S = -0.5A, V_{GS} = 0V$			-1.2	V
<b>DYNAMIC CHARACTERISTICS (note4)</b>						
Input capacitance	$C_{iss}$	$V_{DS} = -16V, V_{GS} = 0V,$ $f = 1MHz$		115		pF
Output capacitance	$C_{oss}$			15		pF
Reverse transfer capacitance	$C_{rss}$			9		pF
<b>SWITCHING CHARACTERISTICS (note4)</b>						
Turn-on delay time (note3)	$t_{d(on)}$	$V_{GS} = -4.5V, V_{DS} = -10V,$ $I_D = -200mA, R_{GEN} = 10\Omega$		9		nS
Turn-on rise time (note3)	$t_r$			6		nS
Turn-off delay time (note3)	$t_{d(off)}$			33		nS
Turn-off fall time (note3)	$t_f$			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.

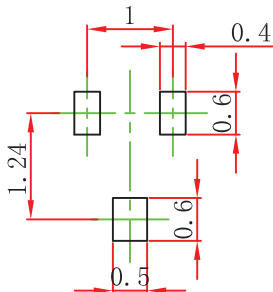


### SOT-523 Package Information



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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