



### MT2301V Plastic-Encapsulate MOSFETS

Dual P-CHANNELMOSFET

#### FEATURE

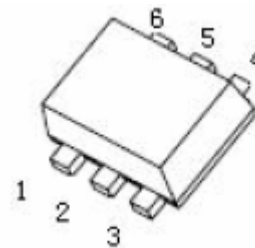
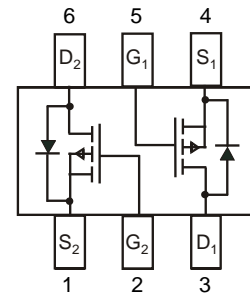
TrenchFET Power MOSFET

#### APPLICATIONS

- Load Switch for Portable Devices
- DC/DC Converter

MARKING: 1DW

#### Equivalent Circuit



SOT-563

#### Maximum ratings (T<sub>a</sub>=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V <sub>DS</sub>	-20	V
Gate-Source Voltage	V <sub>GS</sub>	±8	
Continuous Drain Current	I <sub>D</sub>	-2.1	A
Pulsed Drain Current	I <sub>DM</sub>	-4.8	
Continuous Source-Drain Diode Current	I <sub>S</sub>	-0.72	
Maximum Power Dissipation	P <sub>D</sub>	0.35	W
Thermal Resistance from Junction to Ambient(t ≤5s)	R <sub>θJA</sub>	357	°C/W
Junction Temperature	T <sub>J</sub>	150	°C
Storage Temperature	T <sub>stg</sub>	-55 ~+150	



### Electrical characteristics (T<sub>a</sub>=25°C unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Typ	Max	Units
<b>Static</b>						
Drain-source breakdown voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> = -250μA	-20			V
Gate-source threshold voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = -250μA	-0.4		-1	
Gate-source leakage	I <sub>GSS</sub>	V <sub>DS</sub> = 0V, V <sub>GS</sub> = ±8V			±100	nA
Zero gate voltage drain current	I <sub>DSS</sub>	V <sub>DS</sub> = -20V, V <sub>GS</sub> = 0V			-1	μA
Drain-source on-state resistance <sup>a</sup>	R <sub>DS(on)</sub>	V <sub>GS</sub> = -4.5V, I <sub>D</sub> = -1A		0.090	0.120	Ω
		V <sub>GS</sub> = -2.5V, I <sub>D</sub> = -0.5A		0.110	0.170	
Forward transconductance <sup>a</sup>	g <sub>fs</sub>	V <sub>DS</sub> = -5V, I <sub>D</sub> = -1.8A		6.5		S
<b>Dynamic<sup>b</sup></b>						
Input capacitance	C <sub>iss</sub>	V <sub>DS</sub> = -10V, V <sub>GS</sub> = 0V, f = 1MHz		405		pF
Output capacitance	C <sub>oss</sub>			75		
Reverse transfer capacitance	C <sub>rss</sub>			55		
Total gate charge	Q <sub>g</sub>	V <sub>DS</sub> = -10V, V <sub>GS</sub> = -4.5V, I <sub>D</sub> = -3A		5.5	10	nC
		V <sub>DS</sub> = -10V, V <sub>GS</sub> = -2.5V, I <sub>D</sub> = -3A		3.3	6	
Gate-source charge	Q <sub>gs</sub>	V <sub>DS</sub> = -10V, V <sub>GS</sub> = -2.5V, I <sub>D</sub> = -3A		0.7		
Gate-drain charge	Q <sub>gd</sub>			1.3		
Gate resistance	R <sub>g</sub>	f = 1MHz		6.0		Ω
Turn-on delay time	t <sub>d(on)</sub>	V <sub>DD</sub> = -10V, R <sub>L</sub> = 10Ω, I <sub>D</sub> = -1A, V <sub>GEN</sub> = -4.5V, R <sub>g</sub> = 1Ω		11	20	ns
Rise time	t <sub>r</sub>			35	60	
Turn-off delay time	t <sub>d(off)</sub>			30	50	
Fall time	t <sub>f</sub>			10	20	
<b>Drain-source body diode characteristics</b>						
Continuous source-drain diode current	I <sub>S</sub>	T <sub>C</sub> = 25°C			-1.3	A
Pulse diode forward current <sup>a</sup>	I <sub>SM</sub>				-10	
Body diode voltage	V <sub>SD</sub>	I <sub>S</sub> = -0.7A		-0.8	-1.2	V

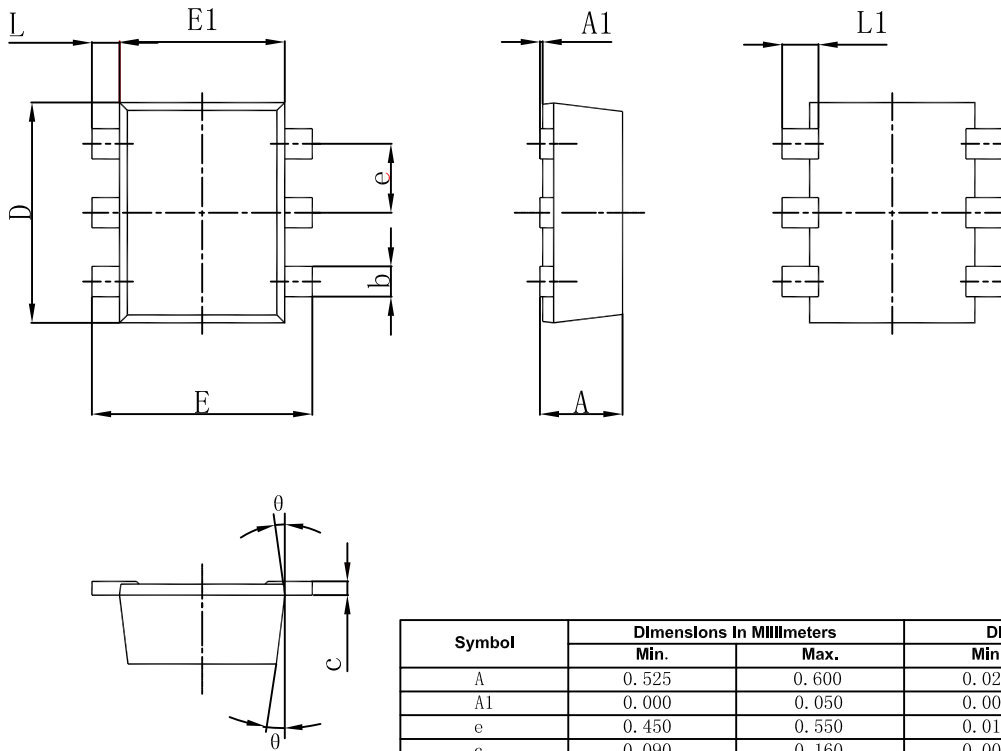
#### Notes :

a. Pulse Test : Pulse Width < 300μs, Duty Cycle ≤2%.

b. Guaranteed by design, not subject to production testing.

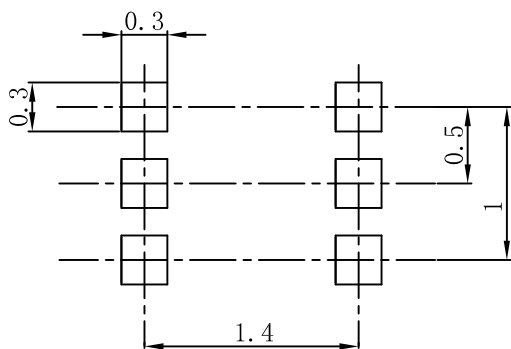


## SOT-563 Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.525	0.600	0.021	0.024
A1	0.000	0.050	0.000	0.002
e	0.450	0.550	0.018	0.022
c	0.090	0.160	0.004	0.006
D	1.500	1.700	0.059	0.067
b	0.170	0.270	0.007	0.011
E1	1.100	1.300	0.043	0.051
E	1.500	1.700	0.059	0.067
L	0.100	0.300	0.004	0.012
L1	0.200	0.400	0.008	0.016
$\theta$	7 <sup>0</sup> REF.		7 <sup>0</sup> REF.	

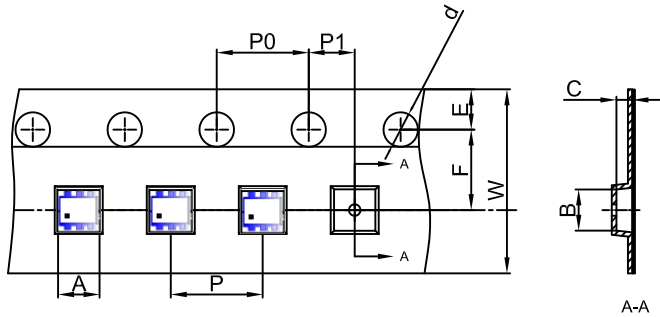
## SOT-563 Suggested Pad Layout



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



### SOT-563 Embossed Carrier Tape



#### Packaging Description:

SOT-563 parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (Heat Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. These reeled parts in standard option are shipped with 3,000 units per 7" or 17.8cm diameter reel. The reels are clear in color and is made of polystyrene plastic (anti-static coated).

Dimensions are in millimeter

Pkg type	A	B	C	d	E	F	P0	P	P1	W
SOT-563	1.78	1.78	0.69	Ø1.50	1.75	3.50	4.00	4.00	2.00	8.00

### SOT-563 Tape Leader and Trailer

