

**Features**

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	$I_D$
20V	380mΩ@4.5V	0.75A
	450mΩ@2.5V	
	800mΩ@1.8V	
-20V	520mΩ@-4.5V	-0.66A
	700mΩ@-2.5V	
	950mΩ(TYP)@-1.8V	

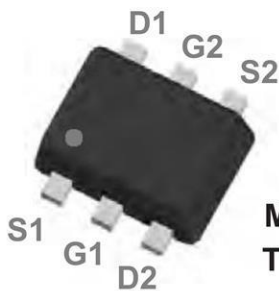
- ESD Protected

**Application**

- Notebook
- Load Switch
- Networking
- Hand-held Instruments

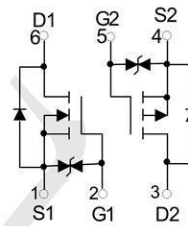
**Package and Pin Configuration**

SOT563



Marking: TW.P  
TW=Par Number  
P =TECH PUBIC LOGOO

**Circuit diagram**



**Absolute Maximum Ratings**  $T_C=25^{\circ}C$  unless otherwise noted

Parameter	Symbol	Value	Unit
<b>N-MOSFET</b>			
Drain-Source Voltage	$V_{DS}$	20	V
Typical Gate-Source Voltage	$V_{GS}$	±12	V
Continuous Drain Current (note 1)	$I_D$	0.75	A
Pulsed Drain Current ( $t_p=10\mu s$ )	$I_{DM}$	1.8	A
<b>P-MOSFET</b>			
Drain-Source Voltage	$V_{DS}$	-20	V
Typical Gate-Source Voltage	$V_{GS}$	±12	V
Continuous Drain Current (note 1)	$I_D$	-0.7	A
Pulsed Drain Current ( $t_p=10\mu s$ )	$I_{DM}$	-1.2	A
<b>Temperature and Thermal Resistance</b>			
Thermal Resistance from Junction to Ambient (note 1)	$R_{\theta JA}$	833	$^{\circ}C/W$
Junction Temperature	$T_J$	150	$^{\circ}C$
Storage Temperature	$T_{STG}$	-55~+150	$^{\circ}C$
Lead Temperature for Soldering Purposes(1/8" from case for 10 s)	$T_L$	260	$^{\circ}C$

**Electrical Characteristics (T<sub>J</sub>=25 °C, unless otherwise noted)**

**N-ch MOSFET ELECTRICAL CHARACTERISTICS**

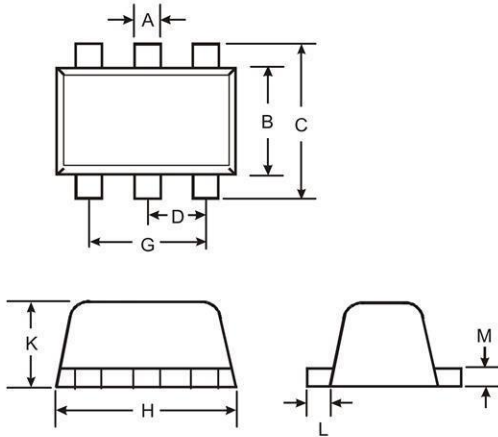
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
<b>STATIC CHARACTERISTICS</b>						
Drain-source breakdown voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> =250μA	20			V
Zero gate voltage drain current	I <sub>DSS</sub>	V <sub>DS</sub> =20V, V <sub>GS</sub> = 0V			1	μA
Gate-body leakage current	I <sub>GSS</sub>	V <sub>GS</sub> =±10V, V <sub>DS</sub> = 0V			±20	uA
Gate threshold voltage (note 2)	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	0.45		1.1	V
Drain-source on-resistance(note 2)	R <sub>DS(on)</sub>	V <sub>GS</sub> =4.5V, I <sub>D</sub> =0.65A			380	mΩ
		V <sub>GS</sub> =2.5V, I <sub>D</sub> =0.55A			450	mΩ
		V <sub>GS</sub> =1.8V, I <sub>D</sub> =0.45A			800	mΩ
Forward tranconductance(note 2)	g <sub>FS</sub>	V <sub>DS</sub> =10V, I <sub>D</sub> =0.8A		1.6		S
Diode forward voltage	V <sub>SD</sub>	I <sub>S</sub> =0.15A, V <sub>GS</sub> = 0V			1.2	V
<b>DYNAMIC CHARACTERISTICS (note 4)</b>						
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =16V, V <sub>GS</sub> =0V, f =1MHz			120	pF
Output Capacitance	C <sub>oss</sub>				20	pF
Reverse Transfer Capacitance	C <sub>rss</sub>				15	pF
<b>SWITCHING CHARACTERISTICS (note 3,4)</b>						
Turn-on delay time	t <sub>d(on)</sub>	V <sub>GS</sub> =4.5V, V <sub>DS</sub> =10V, I <sub>D</sub> =500mA, R <sub>GEN</sub> =10Ω		6.7		ns
Turn-on rise time	t <sub>r</sub>			4.8		ns
Turn-off delay time	t <sub>d(off)</sub>			17.3		ns
Turn-off fall time	t <sub>f</sub>			7.4		ns

**P-ch MOSFET ELECTRICAL CHARACTERISTICS**

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
<b>STATIC CHARACTERISTICS</b>						
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> =±10V, V <sub>DS</sub> = 0V			±20	uA
Gate threshold voltage (note 2)	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =-250μA	-0.45		-1.1	V
Drain-source on-resistance(note 2)	R <sub>DS(on)</sub>	V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-1A		270	520	mΩ
		V <sub>GS</sub> =-2.5V, I <sub>D</sub> =-0.8A		320	700	mΩ
		V <sub>GS</sub> =-1.8V, I <sub>D</sub> =-0.5A		950		mΩ
Forward tranconductance(note 2)	g <sub>FS</sub>	V <sub>DS</sub> =-10V, I <sub>D</sub> =-0.54A		1.2		S
Diode forward voltage	V <sub>SD</sub>	I <sub>S</sub> =-0.5A, V <sub>GS</sub> = 0V			-1.2	V
<b>DYNAMIC CHARACTERISTICS (note 4)</b>						
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =-16V, V <sub>GS</sub> =0V, f =1MHz			170	pF
Output Capacitance	C <sub>oss</sub>				25	pF
Reverse Transfer Capacitance	C <sub>rss</sub>				15	pF
<b>SWITCHING CHARACTERISTICS (note 3,4)</b>						
Turn-on delay time	t <sub>d(on)</sub>	V <sub>GS</sub> =-4.5V, V <sub>DS</sub> =-10V, I <sub>D</sub> =-200mA, R <sub>GEN</sub> =10Ω		9		ns
Turn-on rise time	t <sub>r</sub>			5.8		ns
Turn-off delay time	t <sub>d(off)</sub>			32.7		ns
Turn-off fall time	t <sub>f</sub>			20.3		ns

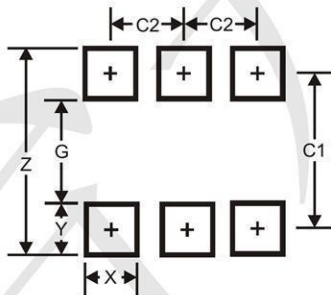


SOT-563 Package Outline Drawing



SOT563			
Dim	Min	Max	Typ
A	0.15	0.30	0.20
B	1.10	1.25	1.20
C	1.55	1.70	1.60
D	-	-	0.50
G	0.90	1.10	1.00
H	1.50	1.70	1.60
K	0.55	0.60	0.60
L	0.10	0.30	0.20
M	0.10	0.18	0.11
All Dimensions in mm			

**Suggested Pad Layout**



Dimensions	Value (in mm)
Z	2.2
G	1.2
X	0.375
Y	0.5
C1	1.7
C2	0.5