

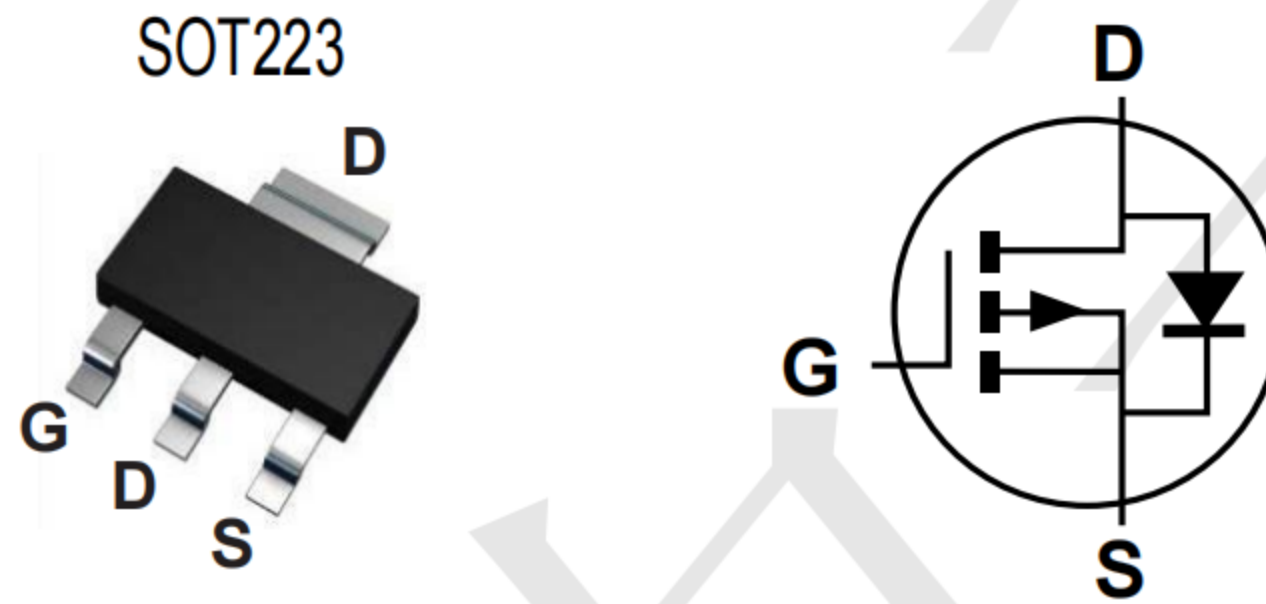
**Features**

- $V_{DS} = -60V, I_D = -3A$   
 $R_{DS(ON)} 95m\ \Omega @ V_{GS} = -10V$  (Typ)

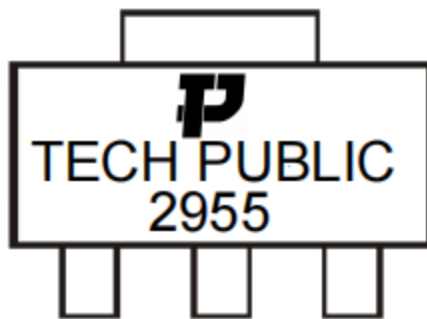
**Application**

- Load/Power Switching
- Interfacing Switching
- Battery Management for Ultra Small Portable Electronics
- Logic Level Shift

**Package and Pin Configuration**



**Marking**



**Absolute Maximum Ratings ( $T_A = 25^\circ C$  unless otherwise noted)**

Characteristic	Symbol	Value	Unit
Drain-Source voltage	$V_{DSS}$	-60	V
Gate-Source voltage	$V_{GS}$	$\pm 20$	V
Continuous Drain current (Note 7) $V_{GS} = -10V$	$I_D$	$T_A = +25^\circ C$	-3
		$T_A = +70^\circ C$	-2.4
Maximum Body Diode Continuous Current	$I_S$	-2	A
Pulsed Drain Current (10 $\mu s$ pulse, duty cycle = 1%)	$I_{DM}$	-15	A
Single Pulsed Avalanche Current (Note 8)	$I_{AS}$	-16	A
Single Pulsed Avalanche Energy (Note 8)	$E_{AS}$	13	mJ

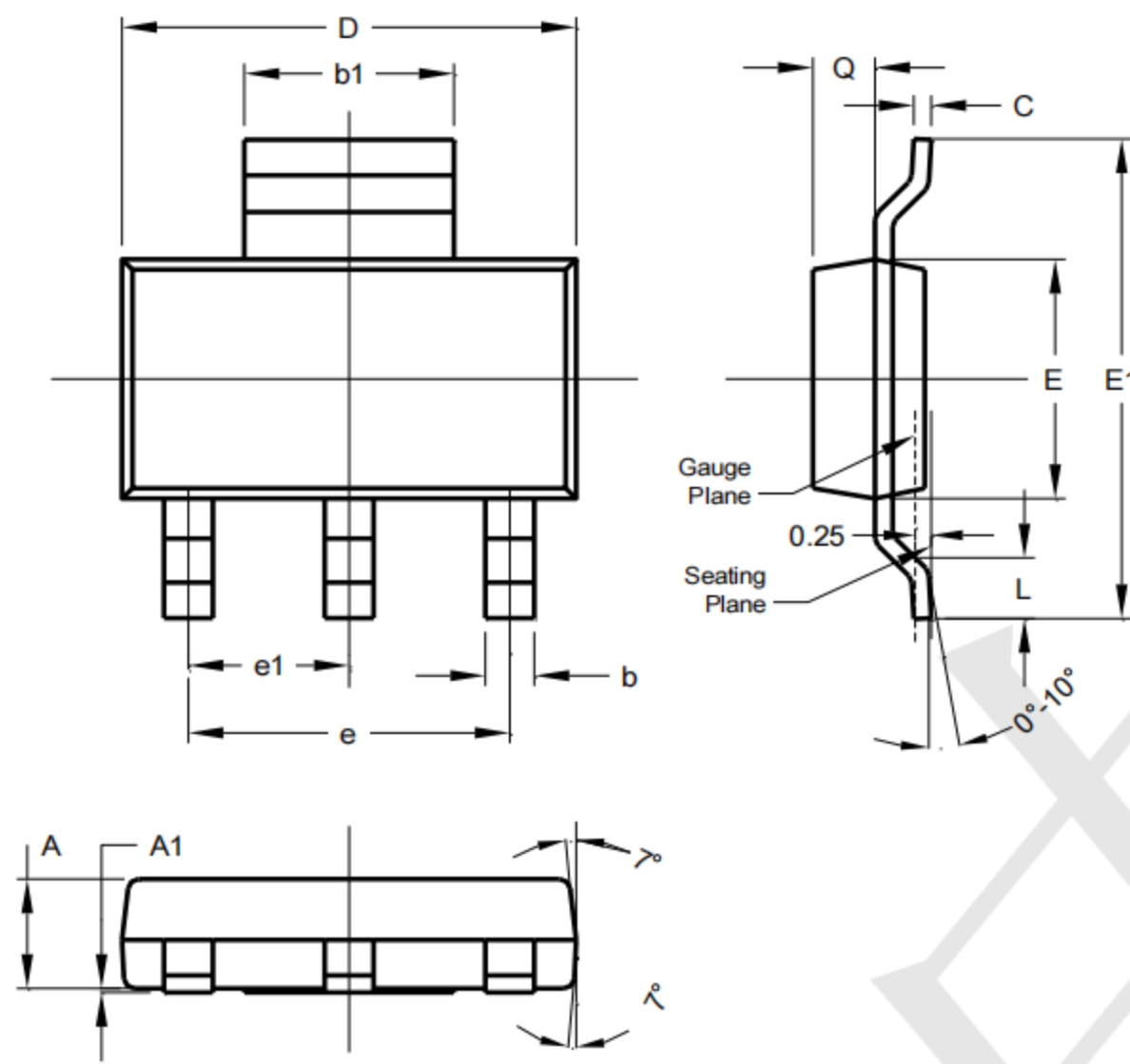
**Thermal Characteristic**

Characteristic	Symbol	Value	Units
Total Power Dissipation (Note 6)	$P_D$	$T_A = +25^\circ C$	1.2
		$T_A = +70^\circ C$	0.8
Thermal Resistance, Junction to Ambient (Note 6)	$R_{\theta JA}$	Steady state	104
		$t < 10s$	51
Total Power Dissipation (Note 7)	$P_D$	$T_A = +25^\circ C$	2.2
		$T_A = +70^\circ C$	1.4
Thermal Resistance, Junction to Ambient (Note 7)	$R_{\theta JA}$	Steady state	60
		$t < 10s$	30
Thermal Resistance, Junction to Case (Note 7)	$R_{\theta JC}$	7.6	$^\circ C/W$
Operating and Storage Temperature Range	$T_J, T_{STG}$	-55 to +150	$^\circ C$

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
<b>OFF CHARACTERISTICS (Note 9)</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	-60	-	-	V	$V_{GS} = 0V, I_D = -250\mu A$
Zero Gate Voltage Drain Current	$I_{DSS}$	-	-	-1	$\mu A$	$V_{DS} = -48V, V_{GS} = 0V$
Gate-Source Leakage	$I_{GSS}$	-	-	$\pm 100$	nA	$V_{GS} = \pm 20V, V_{DS} = 0V$
<b>ON CHARACTERISTICS (Note 9)</b>						
Gate Threshold Voltage	$V_{GS(th)}$	-2	-3	-4	V	$V_{DS} = V_{GS}, I_D = -250\mu A$
Static Drain-Source On-Resistance	$R_{DS(ON)}$	-	95	130	m $\Omega$	$V_{GS} = -10V, I_D = -2.2A$
Diode Forward Voltage	$V_{SD}$	-	-0.75	-0.95	V	$V_{GS} = 0V, I_S = -1A$
<b>DYNAMIC CHARACTERISTICS (Note 10)</b>						
Input Capacitance	$C_{iss}$	-	708	-	pF	$V_{DS} = -30V, V_{GS} = 0V, f = 1MHz$
Output Capacitance	$C_{oss}$	-	39	-	pF	
Reverse Transfer Capacitance	$C_{rss}$	-	32	-	pF	
Gate Resistance	$R_g$	-	17	28	$\Omega$	$V_{DS} = 0V, V_{GS} = 0V, f = 1MHz$
Total Gate Charge ( $V_{GS} = -4.5V$ )	$Q_g$	-	6.2	-	nC	$V_{DS} = -30V, I_D = -12A$
Total Gate Charge ( $V_{GS} = -10V$ )	$Q_g$	-	14	-	nC	
Gate-Source Charge	$Q_{gs}$	-	2.8	-	nC	
Gate-Drain Charge	$Q_{gd}$	-	3.1	-	nC	
Turn-On Delay Time	$t_{D(on)}$	-	5.2	-	ns	$V_{DS} = -30V, R_L = 2.5\Omega, V_{GS} = -10V, R_G = 3\Omega$
Turn-On Rise Time	$t_r$	-	23	-	ns	
Turn-Off Delay Time	$t_{D(off)}$	-	33	-	ns	
Turn-Off Fall Time	$t_f$	-	39	-	ns	
Body Diode Reverse Recovery Time	$t_{rr}$	-	22	-	ns	$I_F = -12A, di/dt = 100A/\mu s$
Body Diode Reverse Recovery Charge	$Q_{rr}$	-	17	-	nC	

**SOT223 Package Information**



SOT223			
Dim	Min	Max	Typ
A	1.55	1.65	1.60
A1	0.010	0.15	0.05
b1	2.90	3.10	3.00
b2	0.60	0.80	0.70
C	0.20	0.30	0.25
D	6.45	6.55	6.50
E	3.45	3.55	3.50
E1	6.90	7.10	7.00
e	—	—	4.60
e1	—	—	2.30
L	0.85	1.05	0.95
Q	0.84	0.94	0.89
All Dimensions in mm			

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