

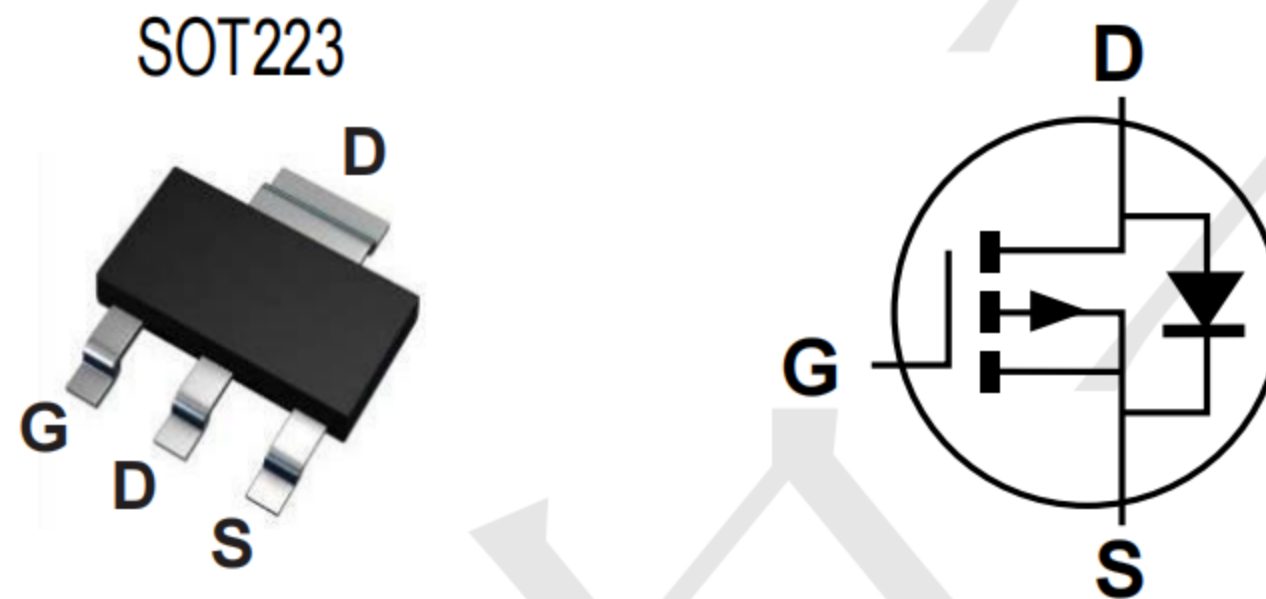
Features

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

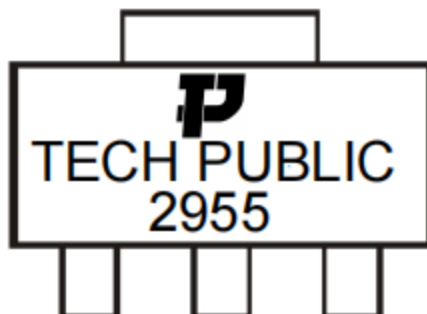
Application

- 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}	± 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 μs 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
OFF CHARACTERISTICS (Note 9)						
Drain-Source Breakdown Voltage	BV_{DSS}	-60	-	-	V	$V_{GS} = 0V, I_D = -250\mu A$
Zero Gate Voltage Drain Current	I_{DSS}	-	-	-1	μA	$V_{DS} = -48V, V_{GS} = 0V$
Gate-Source Leakage	I_{GSS}	-	-	± 100	nA	$V_{GS} = \pm 20V, V_{DS} = 0V$
ON CHARACTERISTICS (Note 9)						
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 Ω	$V_{GS} = -10V, I_D = -2.2A$
Diode Forward Voltage	V_{SD}	-	-0.75	-0.95	V	$V_{GS} = 0V, I_S = -1A$
DYNAMIC CHARACTERISTICS (Note 10)						
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	Ω	$V_{DS} = 0V, V_{GS} = 0V, f = 1MHz$
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

