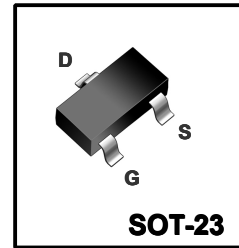
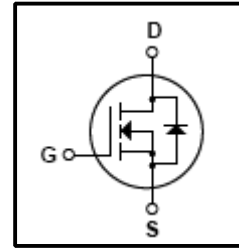


Features

- 6A, 20V, $R_{DS(on)}$ (Max 40m Ω)@ $V_{GS}=4.5V$
- 1.8 V Rated for Low Voltage Gate Drive
- SOT-23 Surface Mount for Small Footprint
- Single Pulse Avalanche Energy Rated
- RoHS compliant

General Description

This MOSFET is produced using Winsemi's advanced MOS technology. This latest technology has been especially designed to minimize on-state resistance, have a high rugged avalanche characteristics. This devices is specially well suited for Load switching and PA switching.



Absolute Maximum Ratings (T_c=25°C unless otherwise noted)

Symbol	Parameter	Value	Units
V _{DSS}	Drain Source Voltage	20	V
I _D	Continuous Drain Current	6	A
I _{DM}	Drain Current Pulsed	20	A
P _D	Total Power Dissipation(Note 1)	0.3	W
V _{GS}	Gate to Source Voltage	±12	V
T _J , T _{stg}	Junction and Storage Temperature	-55~150	°C
T _L	Maximum lead Temperature for soldering purposes	260	°C

Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be affected.

Thermal Characteristics

Symbol	Parameter	Value			Units
		Min	Typ	Max	
R _{QJA}	Thermal Resistance, Junction-to-Ambient(Note 1)	-	-	170	°C/W
R _{QJA}	Thermal Resistance, Junction-to-Ambient(Note 1)			110	°C/W
R _{QJA}	Thermal Resistance, Junction-to-Ambient(Note 2)			300	°C/W

Note 1: Surface-mounted on FR4 board using 1 in sq pad size (Mounted on a ceramic board (1000mm²×0.8mm) 1units)

Note 2: Surface-mounted on FR4 board using the minimum recommended pad size.

Electrical Characteristics ($T_C = 25^\circ\text{C}$)

Characteristics		Symbol	Test Condition	Min	Type	Max	Unit
Gate leakage current(Note 4)		I _{GSS}	V _{GS} = ±10 V, V _{DS} = 0 V	-	-	±100	nA
Drain cut-off current(Note 4)		I _{DSS}	V _{DS} = 16 V, V _{GS} = 0 V	-	-	-1	μA
Drain-source breakdown voltage		V _{(BR)DSS}	I _D = 250 μA, V _{GS} = 0 V	20	-	-	V
Gate threshold voltage		V _{GS(th)}	V _{DS} = V _{DS} I _D =-250 μA	0.5	-	1.0	V
Drain-source ON resistance		R _{DS(ON)}	V _{GS} = 4.5 V, I _D = 3A	-	32	40	mΩ
			V _{GS} = 2.5 V, I _D = 2.0 A		40	55	
			V _{GS} = 1.8 V, I _D = 1.0 A		65	110	
Forward Transconductance		g _{fs}	V _{DS} = 5.0 V, I _D = 2.8 A	-	6.5	-	S
Input capacitance		C _{iSS}	V _{DS} =10 V, V _{GS} = 0 V, f = 1 MHz	-	430	-	pF
Reverse transfer capacitance		C _{rSS}		-	90	-	
Output capacitance		C _{oSS}		-	110	-	
Switching time (Note 5)	Turn-on Delay time	t _{d(on)}	V _{GS} =4.5 V,	-	5	10	ns
	Turn-on Rise time	t _r	V _{DS} =10V,	-	15	28	
	Turn-off Delay time	t _{d(off)}	I _D = 1.0 A,	-	26	48	
	Turn-off Fall time	t _f	R _G = 6 Ω, R _L =10 Ω	-	15	28	
Total gate charge		Q _g	V _{GS} =4.5V, V _{DS} =10V, I _D = 6 A	-	6	8	nC
Gate-source charge		Q _{gs}		-	0.7	-	
Gate-drain (“miller”) Charge		Q _{gd}		-	3	-	

Source-Drain Ratings and Characteristics ($T_a = 25^\circ\text{C}$)

Characteristics	Symbol	Test Condition	Min	Type	Max	Unit
Continuous drain reverse current	I_{DR}	-	-	-	6	A
Pulse drain reverse current	I_{DRP}	-	-	-	20	A
Forward voltage (diode)	V_{DSF}	$I_{DR} = 1\text{ A}, V_{GS} = 0\text{ V}$	-	0.7	1.3	V

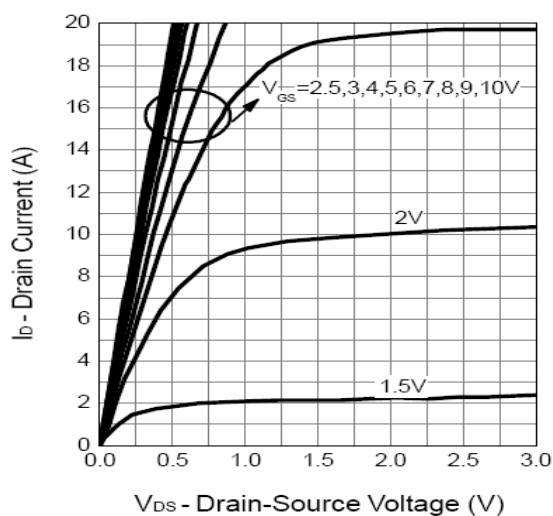
Note 4: Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle 3 2%.

Note 5: Switching characteristics are independent of operating junction temperature.

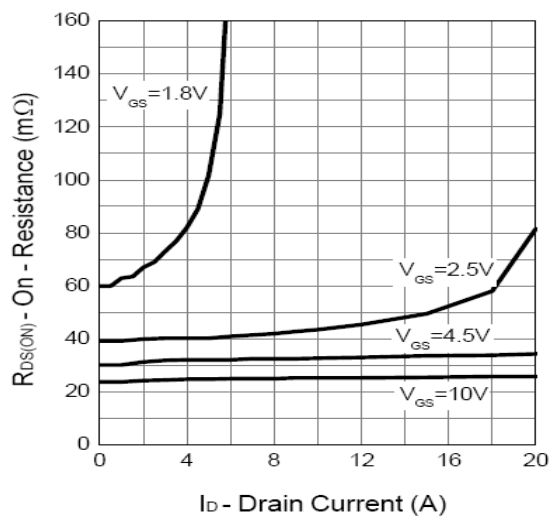
This transistor is an electrostatic sensitive device

Please handle with caution

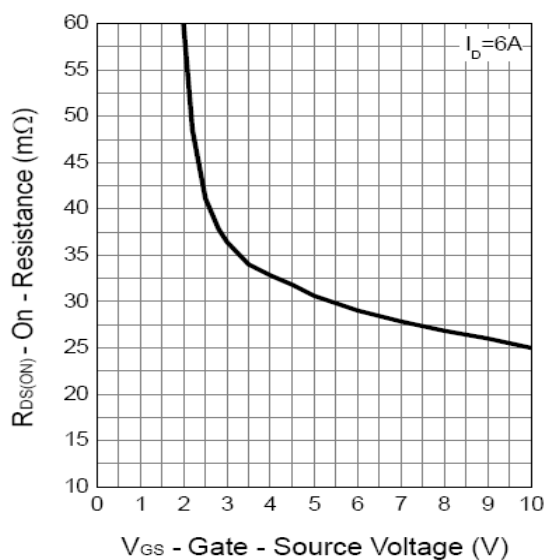
Output Characteristics



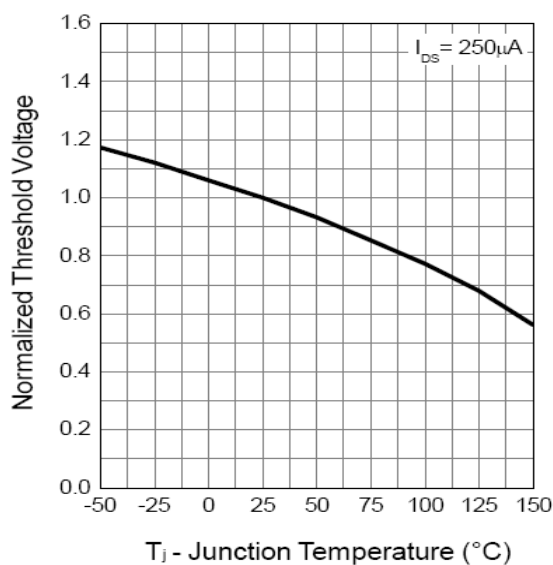
Drain-Source On Resistance



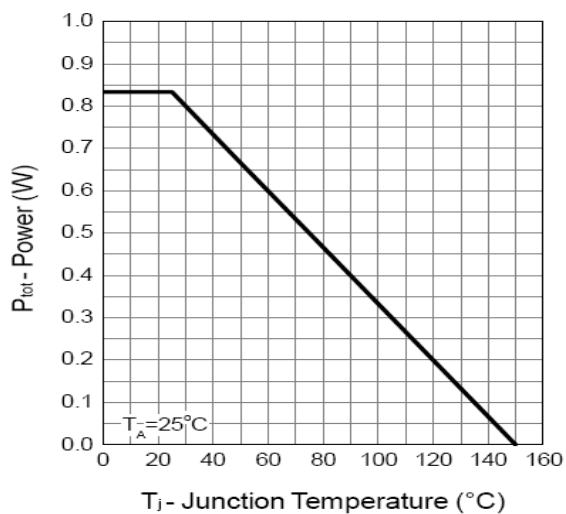
Drain-Source On Resistance



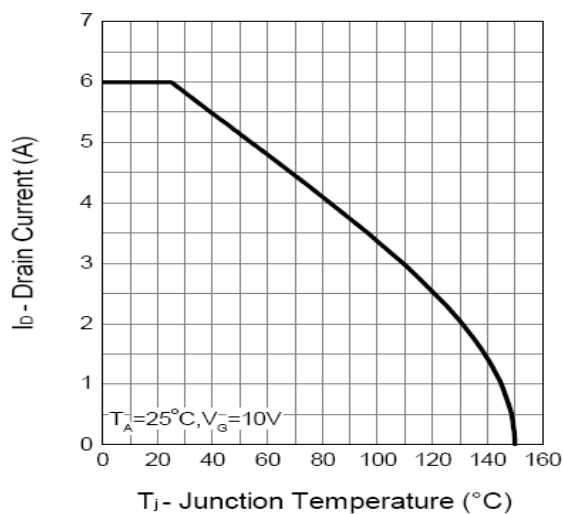
Gate Threshold Voltage



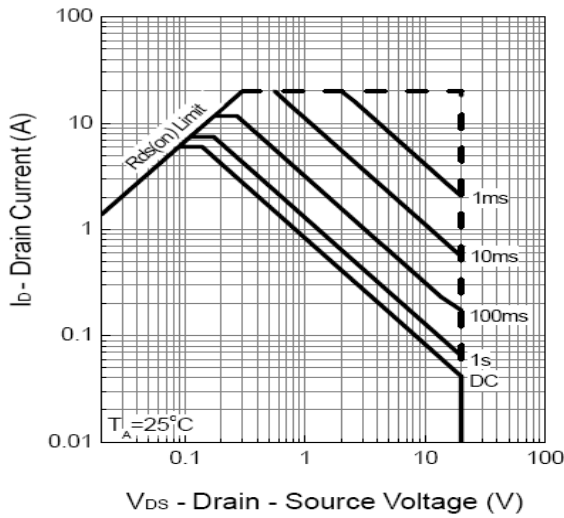
Power Dissipation



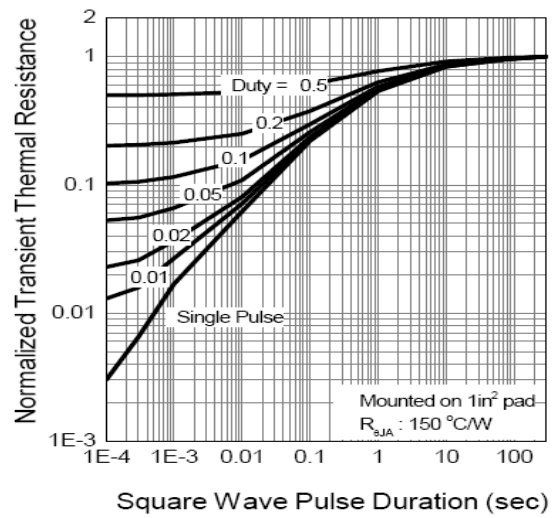
Drain Current



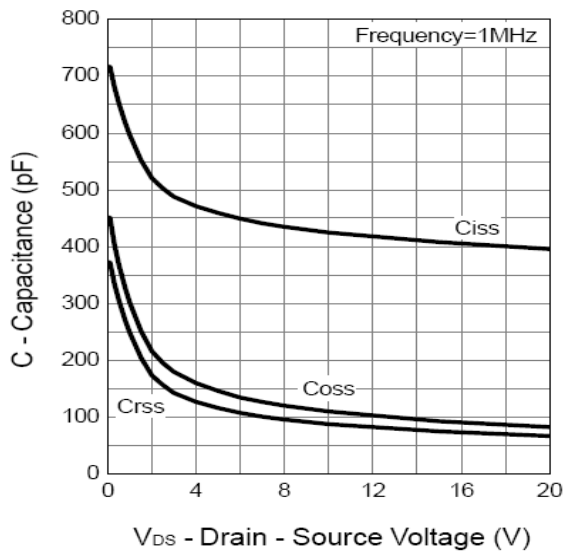
Safe Operation Area



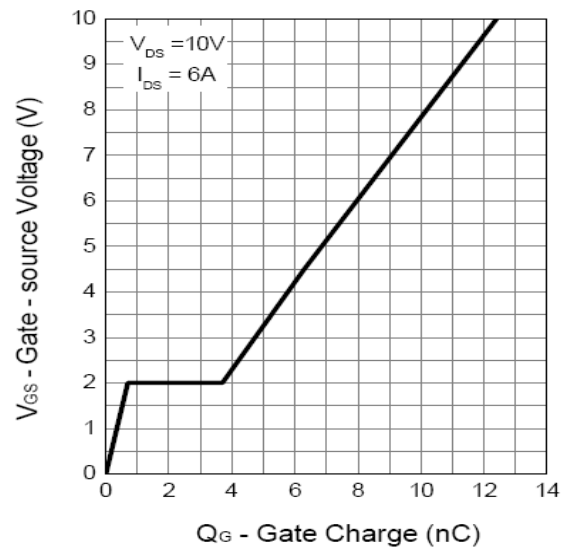
Thermal Transient Impedance



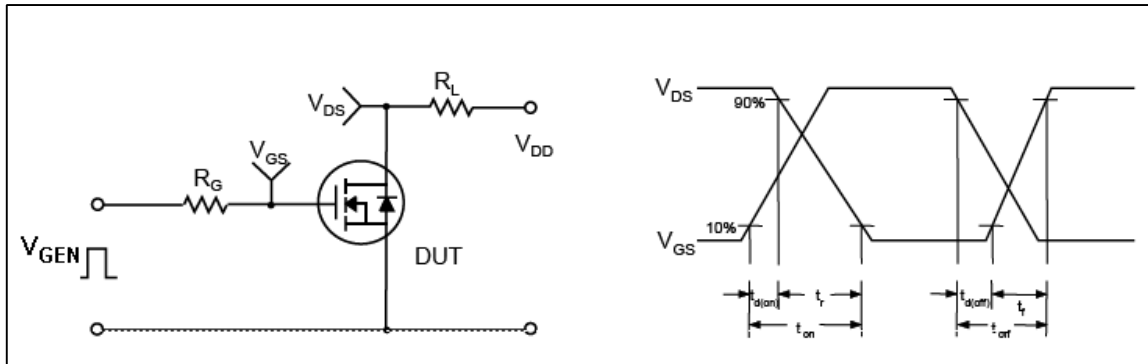
Capacitance



Gate Charge



Resistive Switching Test & Waveforms



SOT-23 Package Dimension

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	0.95		0.037	
A1	1.90		0.074	
B	2.60	3.00	0.102	0.118
C	1.40	1.70	0.055	0.067
D	2.80	3.10	0.110	0.122
E	1.00	1.30	0.039	0.051
F	0.00	0.10	0.000	0.004
G	0.35	0.50	0.014	0.020
H	0.10	0.20	0.004	0.008
I	0.30	0.60	0.012	0.024
J	50°	10°	50°	10°

