

## P-Channel Power MOSFET

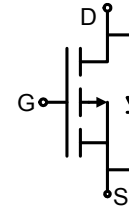
### General Features

- $V_{DS} = -30V, I_D = -4.2A$   
 $R_{DS(ON)} < 50m\Omega @ V_{GS} = -10V$   
 $R_{DS(ON)} < 60m\Omega @ V_{GS} = -4.5V$

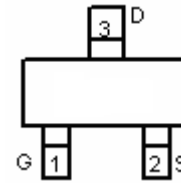
- High power and current handling capability
- Lead free product is acquired
- Surface mount package

### Application

- PWM applications
- Load switch
- Power management



Schematic diagram



Marking and Pin Assignment



SOT-23 top view

### MAXIMUM RATINGS

Characteristic	Symbol	Max	Unit
Drain-Source Voltage	$BV_{DSS}$	-30	V
Gate- Source Voltage	$V_{GS}$	$\pm 12$	V
Drain Current (continuous)	$I_D$	-4.2	A
Drain Current (pulsed)	$I_{DM}$	-18	A
Total Device Dissipation $T_A = 25^\circ C$	$P_D$	1400	mW
Junction	$T_J$	150	$^\circ C$
Storage Temperature	$T_{stg}$	-55to+150	$^\circ C$

**ELECTRICAL CHARACTERISTICS**

 (T<sub>A</sub>=25°C unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage (I <sub>D</sub> = -250uA, V <sub>GS</sub> =0V)	BV <sub>DSS</sub>	-30	—	—	V
Gate Threshold Voltage (I <sub>D</sub> = -250uA, V <sub>GS</sub> = V <sub>DS</sub> )	V <sub>GS(th)</sub>	-0.6	—	-2	V
Diode Forward Voltage Drop (I <sub>S</sub> = -1A, V <sub>GS</sub> =0V)	V <sub>SD</sub>	—	—	-1	V
Zero Gate Voltage Drain Current (V <sub>GS</sub> =0V, V <sub>DS</sub> = -24V, T <sub>A</sub> =55°C)	I <sub>DSS</sub>	—	—	-1 -5	uA
Gate Body Leakage (V <sub>GS</sub> =±12V, V <sub>DS</sub> =0V)	I <sub>GSS</sub>	—	—	±100	nA
Static Drain-Source On-State Resistance (I <sub>D</sub> = -4.2A, V <sub>GS</sub> = -10V)	R <sub>DS(ON)</sub>	—	42	50	mΩ
Static Drain-Source On-State Resistance (I <sub>D</sub> = -2A, V <sub>GS</sub> = -4.5V)	R <sub>DS(ON)</sub>	—	53	60	mΩ
Static Drain-Source On-State Resistance (I <sub>D</sub> = -1A, V <sub>GS</sub> = -2.5V)	R <sub>DS(ON)</sub>	—	80	85	mΩ
Input Capacitance (V <sub>GS</sub> =0V, V <sub>DS</sub> = -15V, f=1MHz)	C <sub>ISS</sub>	—	954	—	pF
Output Capacitance (V <sub>GS</sub> =0V, V <sub>DS</sub> = -15V, f=1MHz)	C <sub>OSS</sub>	—	115	—	pF
Turn-ON Time (V <sub>DS</sub> = -15V, V <sub>GS</sub> = -10V, R <sub>GEN</sub> =6Ω)	t <sub>(on)</sub>	—	6	—	ns
Turn-OFF Time (V <sub>DS</sub> = -15V, V <sub>GS</sub> = -10V, R <sub>GEN</sub> =6Ω)	t <sub>(off)</sub>	—	38	—	ns

Pulse Width ≤ 300 μs; Duty Cycle ≤ 2.0%

## TYPICAL CHARACTERISTIC CURVE

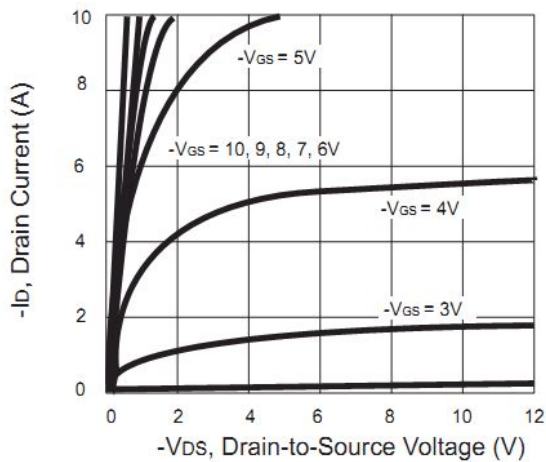


Fig 1: Output Characteristics

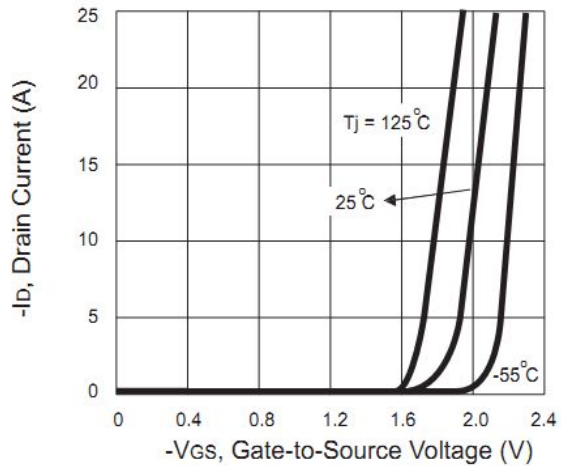


Figure 2: Transfer Characteristics

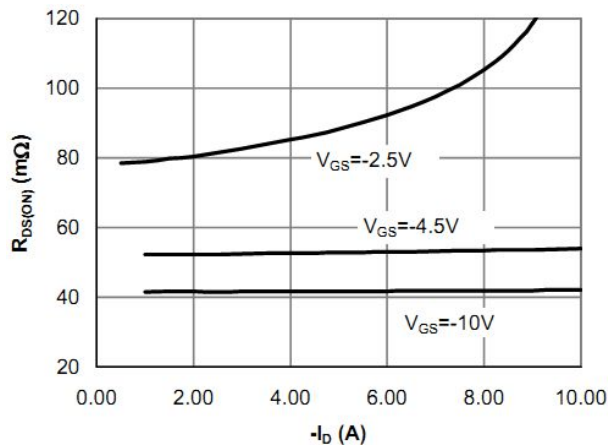


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

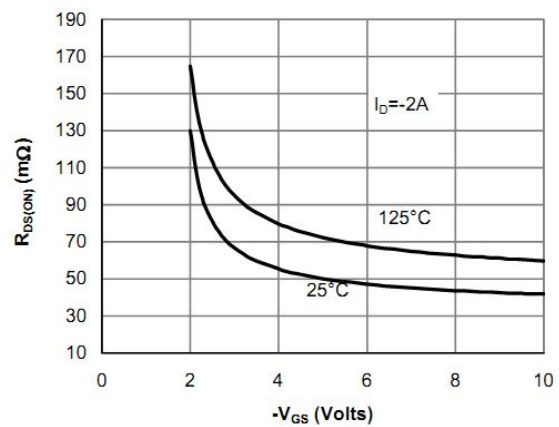


Figure 4: On-Resistance vs. Gate-Source Voltage

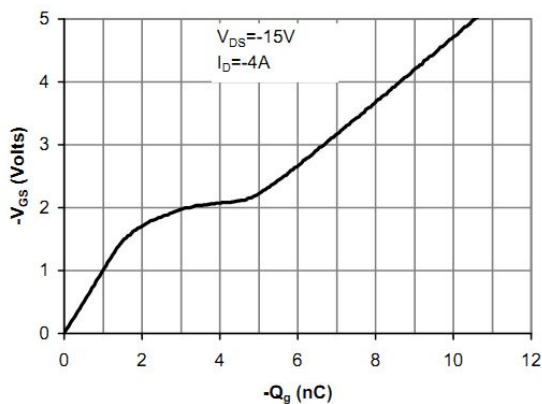


Figure 5: Gate-Charge Characteristics

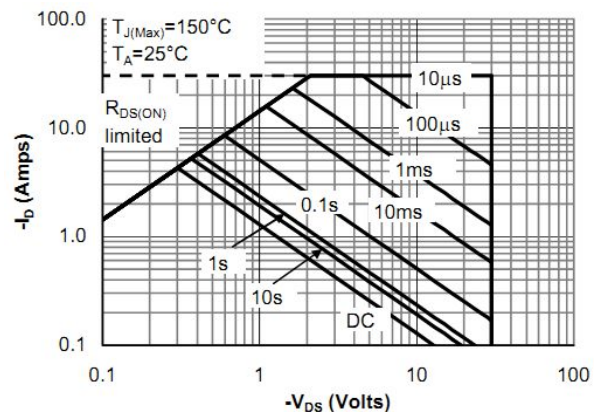
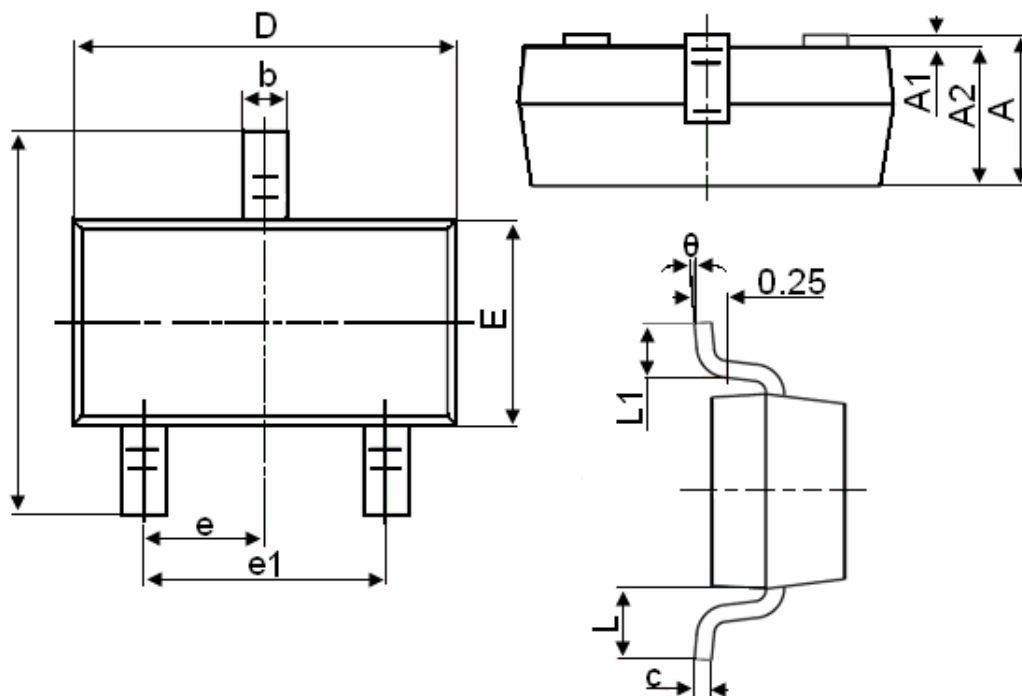


Figure 6: Safe Operating Area

**SOT-23 Package Information**


Symbol	Dimensions in Millimeters	
	MIN.	MAX.
A	0.900	1.150
A1	0.000	0.100
A2	0.900	1.050
b	0.300	0.500
c	0.080	0.150
D	2.800	3.000
E	1.200	1.400
E1	2.250	2.550
e	0.950TYP	
e1	1.800	2.000
L	0.550REF	
L1	0.300	0.500
$\theta$	0°	8°