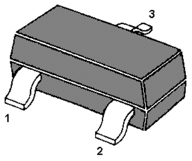
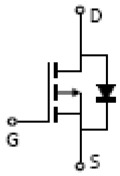
30V/-4.2A P Channel Advanced Power MOSFET

SOT-23

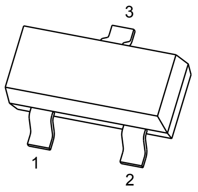


MARKING : R1

Equivalent Circuit



SOT-23



1. GATE
2. SOURCE
3. DRAIN

$V_{(BR)DSS}$	$R_{DS(ON)}$ Typ	I_D Max
-30V	59mΩ @-10V	-4.2A
	68mΩ @ -4.5V	

Absolute Maximum Ratings

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

Symbol	Parameter		Rating	Unit
Common Ratings (T_A=25°C Unless Otherwise Noted)				
V_{GS}	Gate-Source Voltage		±12	V
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage		-30	V
T_J	Maximum Junction Temperature		150	°C
T_{STG}	Storage Temperature Range		-50 to 150	°C
Mounted on Large Heat Sink				
I_{DM}	Pulse Drain Current Tested①	T_A =25°C	-16	A
I_D	Continuous Drain Current	T_A =25°C	-4	A
		T_A =70°C	-3.2	

Symbol	Parameter	Condition	Min	Typ	Max	Unit
Static Electrical Characteristics @ TJ = 25°C (unless otherwise stated)						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	VGS=0V ID=-250μA	-30	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current(TA=25℃)	VDS=-30V, VGS=0V	--	--	-1	μA
	Zero Gate Voltage Drain Current(TA=125℃)	VDS=-24V, VGS=0V	--	--	-100	uA
I_{GSS}	Gate-Body Leakage Current	VGS=±12V, VDS=0V	--	--	±100	nA
$V_{GS(TH)}$	Gate Threshold Voltage	VDS=VGS, ID=-250μA	-0.5	-0.8	-1.2	V
$R_{DS(ON)}$	Drain-Source On-State Resistance②	VGS=-10V, ID=-4A	--	48	59	mΩ
$R_{DS(ON)}$	Drain-Source On-State Resistance②	VGS=-4.5V, ID=-3A	--	59	68	mΩ
$R_{DS(ON)}$	Drain-Source On-State Resistance②	VGS=-3.3V, ID=-3A	--	75	90	mΩ
Dynamic Electrical Characteristics @ TJ = 25°C (unless otherwise stated)						
C_{iss}	Input Capacitance	VDS=-15V, VGS=0V, f=1MHz	--	655	--	pF
C_{oss}	Output Capacitance		--	65	--	pF
C_{rss}	Reverse Transfer Capacitance		--	53	--	pF
Q_g	Total Gate Charge	VDS=-15V ID=-4A, VGS=-4.5V	--	7.2	--	nC
Q_{gs}	Gate Source Charge		--	1.5	--	nC
Q_{gd}	Gate Drain Charge		--	2.6	--	nC
Switching Characteristics @ TJ = 25°C (unless otherwise stated)						
$t_{d(on)}$	Turn on Delay Time	VDD=-15V, ID=-2A, RG=3.3Ω, VGS=-10V	--	7	--	ns
t_r	Turn on Rise Time		--	3.8	--	ns
$t_{d(off)}$	Turn Off Delay Time		-	35	--	ns
t_f	Turn Off Fall Time		--	10.5	--	ns
Source Drain Diode Characteristics						
I_{SD}	Source drain current(Body Diode)	TA=25℃	--	--	-2	A
V_{SD}	Forward on voltage②	Tj=25℃, ISD=-4A, VGS=0V	--	-0.88	-1.2	V

Typical Characteristics

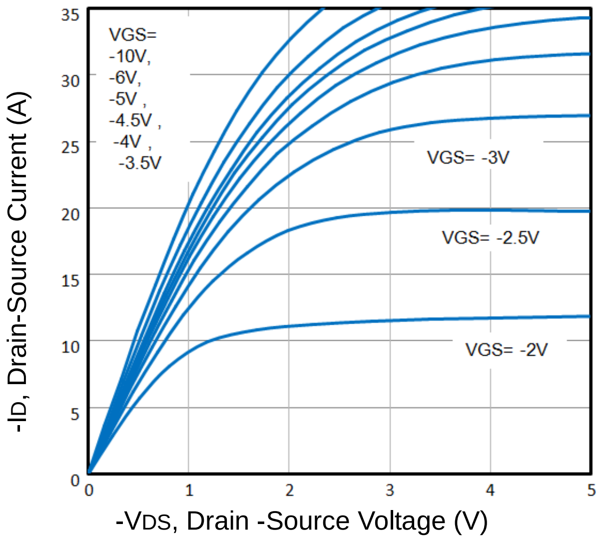


Fig1. Typical Output Characteristics

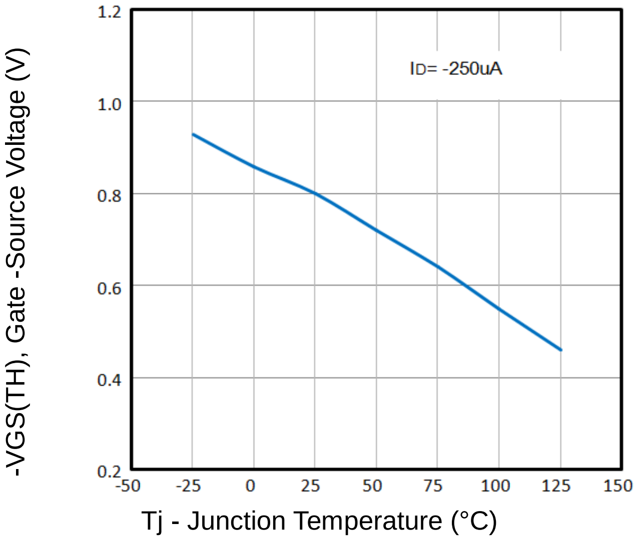


Fig2. Normalized Threshold Voltage Vs. Temperature

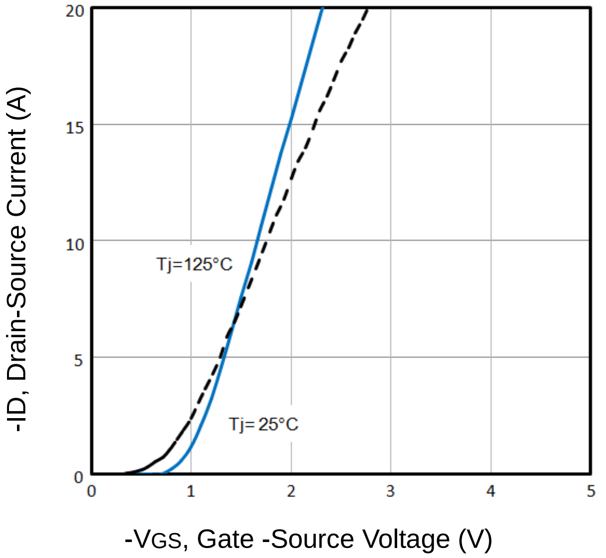


Fig3. Typical Transfer Characteristics

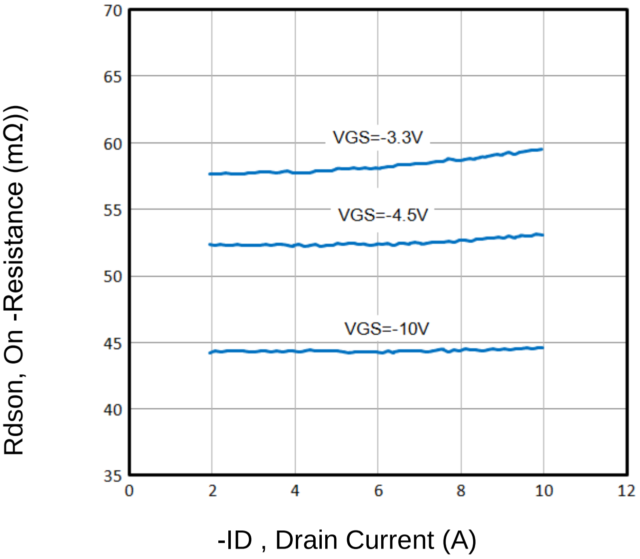


Fig4. On-Resistance vs. Drain Current and Gate

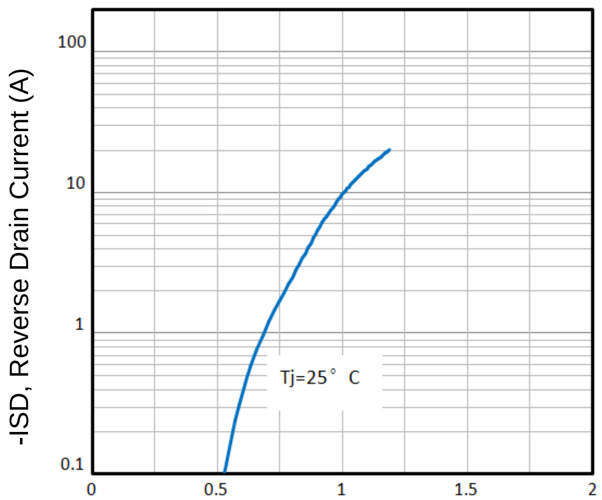


Fig5. Typical Source-Drain Diode Forward Voltage

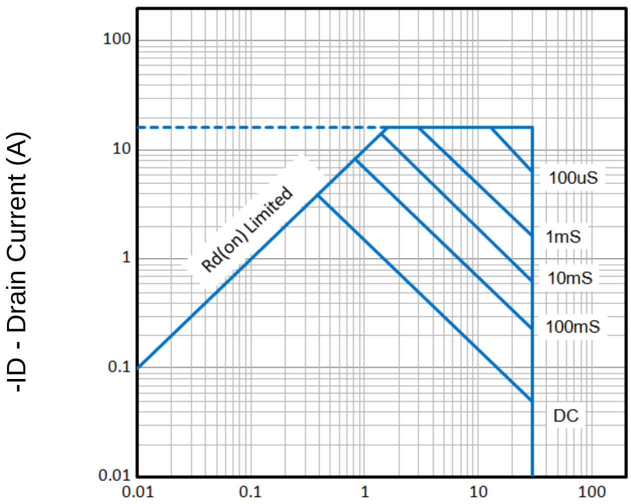
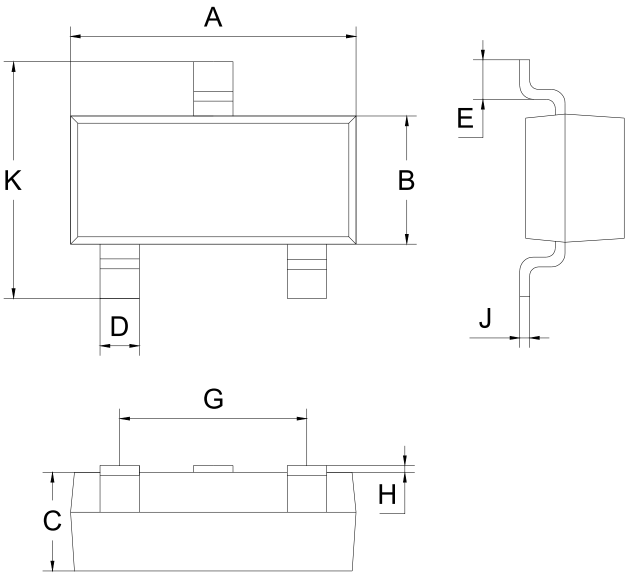


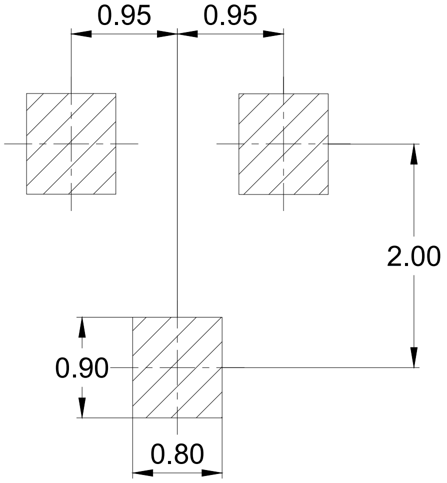
Fig6. Maximum Safe Operating Area

Plastic surface mounted package SOT-23



SOT-23		
Dim	Min	Max
A	2.70	3.10
B	1.10	1.50
C	1.0 Typical	
D	0.4 Typical	
E	0.35	0.48
G	1.80	2.00
H	0.02	0.1
J	0.1 Typical	
K	2.20	2.60
All Dimensions in mm		

SOLDERING FOOTPRINT



Unit : mm