30V N-Channel and P-Channel MOSFET

Features

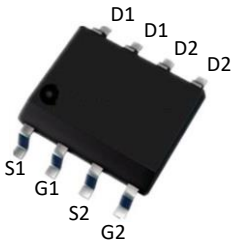
- High power and current handing capability
- Lead free product is acquired
- Surface mount package

Application

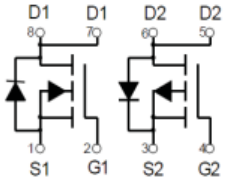
- Battery protection
- Load switch
- Power management

Product Summary

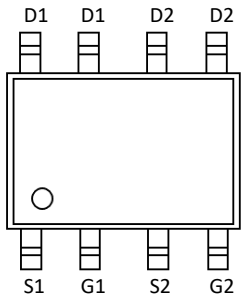
V_{DS}	$R_{DS(ON)}$ MAX	I_D MAX
30V	30mΩ@10V	6A
	42mΩ@4.5V	
-30V	50mΩ@-10V	-4.5A
	70mΩ@-4.5V	



SOP-8 top view



Schematic diagram



Marking and pin assignment

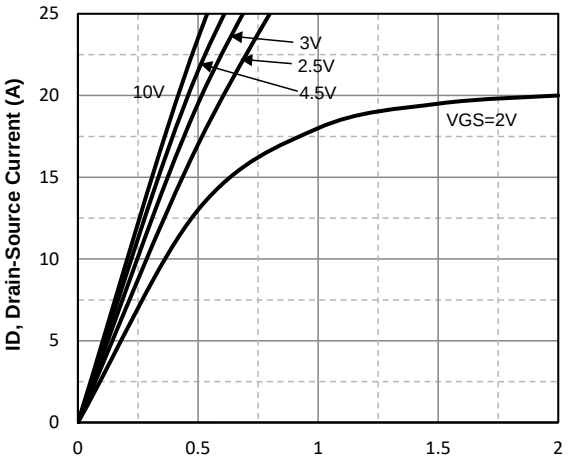
Pb-Free RoHS Halogen-Free

Absolute Maximum Ratings (TA=25℃unless otherwise noted)					
Symbol	**Parameter**		**N-Channel**	**P-Channel**	**Unit**
Common Ratings (TC=25°C Unless Otherwise Noted)					
V_{DS}	Drain-Source Breakdown Voltage		30	-30	V
V_{GS}	Gate-Source Voltage		±20	±20	V
T_J	Maximum Junction Temperature		150	150	°C
T_{STG}	Storage Temperature Range		-55 to 150	-55 to 150	°C
I_S	Diode Continuous Forward Current	Tc=25°C	6	-4.5	A
Mounted on Large Heat Sink					
I_{DM}	Pulse Drain Current Tested	Tc=25°C	33	-28	A
I_D	Continuous Drain Current@GS=10V	Tc=25°C	6	-4.5	A
P_D	Maximum Power Dissipation	Tc=25°C	2	2	W
$R_{\theta JA}$	Thermal Resistance Junction-Ambient((*1 in2 Pad of 2-oz Copper), Max.)		50	50	°C/W

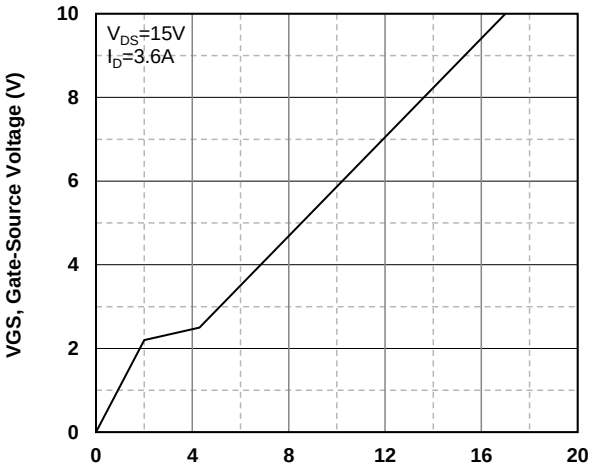
N-Ch Electrical Characteristics (TJ=25℃ unless otherwise noted)						
Symbol	**Parameter**	**Condition**	**Min**	**Typ**	**Max**	**Unit**
Static Electrical Characteristics @ TJ = 25°C (unless otherwise stated)						
$BV_{(BR)DSS}$	Drain-Source Breakdown Voltage	VGS=0V，ID=250μA	30	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current	VDS=30V，VGS=0V	--	--	1	uA
I_{GSS}	Gate-Body Leakage Current	VGS=±20V，VDS=0V	--	--	±100	nA
$V_{GS(th)}$	Gate Threshold Voltage	VDS=VGS，ID=250μA	1	1.5	2.5	V
$R_{DS(on)}$	Drain-Source On-State Resistance	VGS=10V， ID=5.6A	--	19	30	mΩ
		VGS=4.5V，ID=5A	--	26	42	
Dynamic Electrical Characteristics @ TJ = 25°C (unless otherwise stated)						
C_{ISS}	Input Capacitance	VDS=10V，VGS=0V， f=1MHz	--	632	--	pF
C_{OSS}	Output Capacitance		--	58	--	pF
C_{RSS}	Reverse Transfer Capacitance		--	70	--	pF
Switching Characteristics						
Q_g	Total Gate Charge	VDS=15V，ID=3.6A，VGS=10V	--	17	--	nC
Q_{gs}	Gate Source Charge		--	2	--	nC
Q_{gd}	Gate Drain Charge		--	2	--	nC
$t_{d(on)}$	Turn-on Delay Time	VDS=15V，RL=4.1Ω，VGS=10V，RG=3Ω	--	4.5	--	nS
t_r	Turn-on Rise Time		--	28.5	--	nS
$t_{d(off)}$	Turn-Off Delay Time		--	16.5	--	nS
t_f	Turn-Off Fall Time		--	26	--	nS
Source- Drain Diode Characteristics						
V_{SD}	Forward on voltage	Tj=25℃，Is=5.6A，	--	--	1.2	V

P-Ch Electrical Characteristics (TJ=25℃ unless otherwise noted)						
Symbol	**Parameter**	**Condition**	**Min**	**Typ**	**Max**	**Unit**
Static Electrical Characteristics @ TJ = 25°C (unless otherwise stated)						
$BV_{(BR)DSS}$	Drain-Source Breakdown Voltage	VGS=0V，ID=-250μA	-30	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current	VDS=-30V，VGS=0V	--	--	-1	uA
I_{GSS}	Gate-Body Leakage Current	VGS=±20V，VDS=0V	--	--	±100	nA
$V_{GS(th)}$	Gate Threshold Voltage	VDS=VGS，ID=-250μA	-1	-1.5	-2.5	V
$R_{DS(on)}$	Drain-Source On-State Resistance	VGS=-10V， ID=-4.2A	--	39	50	mΩ
		VGS=-4.5V，ID=-3.5A	--	52	70	
Dynamic Electrical Characteristics @ TJ = 25°C (unless otherwise stated)						
C_{ISS}	Input Capacitance	VDS=-15V，VGS=0V， f=1MHz	--	770	--	pF
C_{OSS}	Output Capacitance		--	440	--	pF
C_{RSS}	Reverse Transfer Capacitance		--	123	--	pF
Switching Characteristics						
Q_g	Total Gate Charge	VDS=-10V，ID=-4.2A，VGS=-15V	--	30	--	nC
Q_{gs}	Gate Source Charge		--	2.7	--	nC
Q_{gd}	Gate Drain Charge		--	6.9	--	nC
$t_{d(on)}$	Turn-on Delay Time	VDD=-15V，ID=-1A，VGS=-10V，RG=2.5Ω	--	9	--	nS
t_r	Turn-on Rise Time		--	16	--	nS
$t_{d(off)}$	Turn-Off Delay Time		--	77	--	nS
t_f	Turn-Off Fall Time		--	40	--	nS
Source- Drain Diode Characteristics						
V_{SD}	Forward on voltage	Tj=25℃，Is=-4.2A，	--	--	-1.2	V

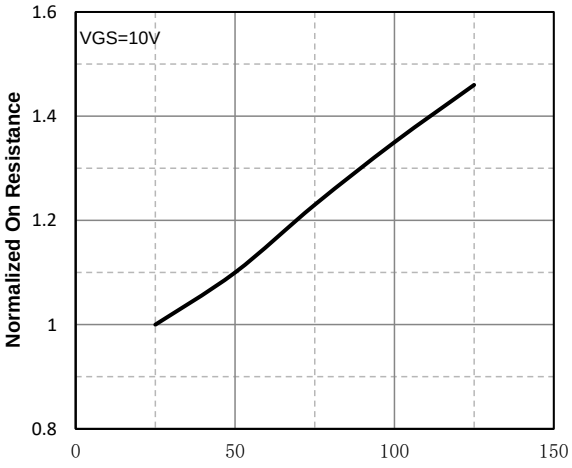
N-Channel Typical Operating Characteristics



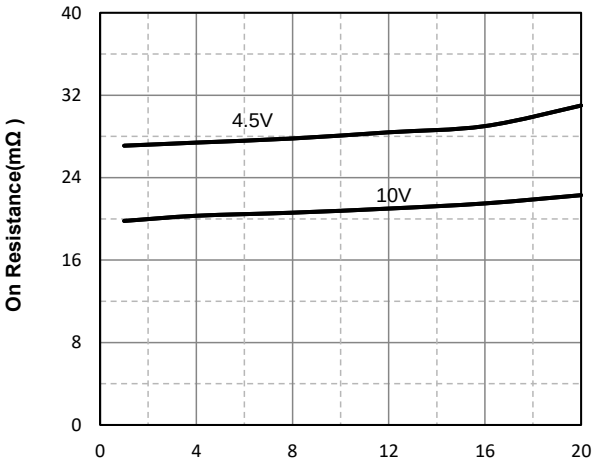
VDS, Drain -Source Voltage (V)
Fig1. Typical Output Characteristics



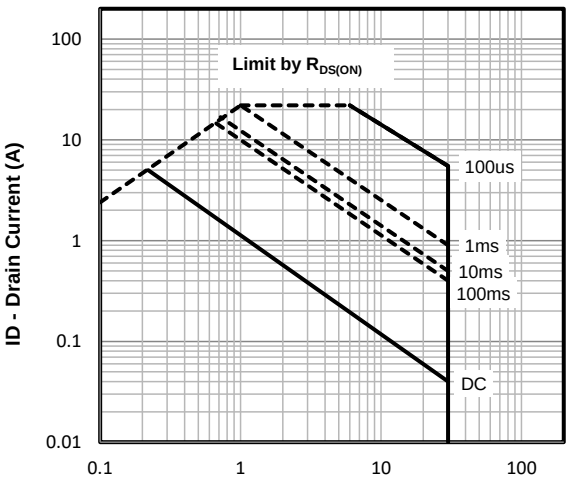
Qg -Total Gate Charge (nC)
Fig2. Typical Gate Charge Vs.Gate-Source Voltage



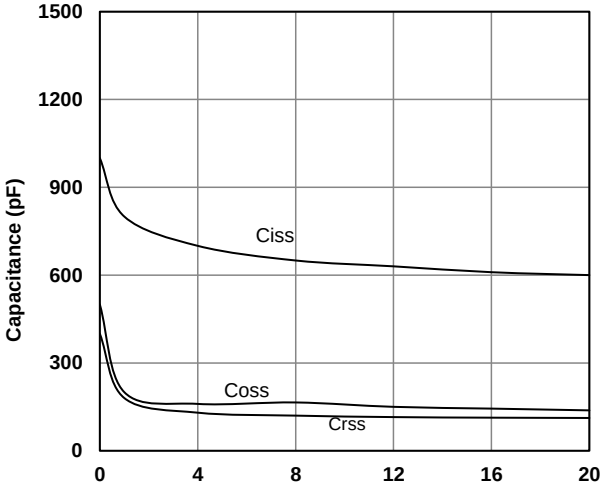
Tj - Junction Temperature (°C)
Fig3. Normalized On-Resistance Vs. Temperature



ID, Drain-Source Current (A)
Fig4. On-Resistance Vs. Drain-Source Current

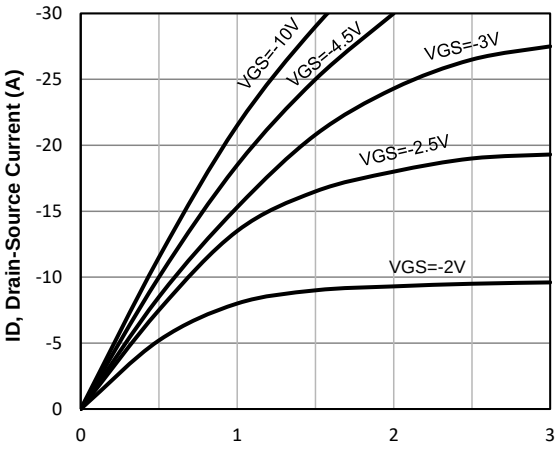


VDS, Drain -Source Voltage (V)
Fig5. Maximum Safe Operating Area



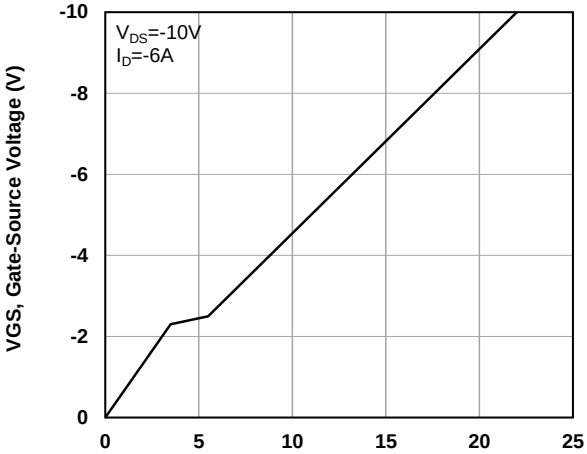
VDS , Drain-Source Voltage (V)
Fig6 Typical Capacitance Vs.Drain-Source Voltage

P-Channel Typical Operating Characteristics



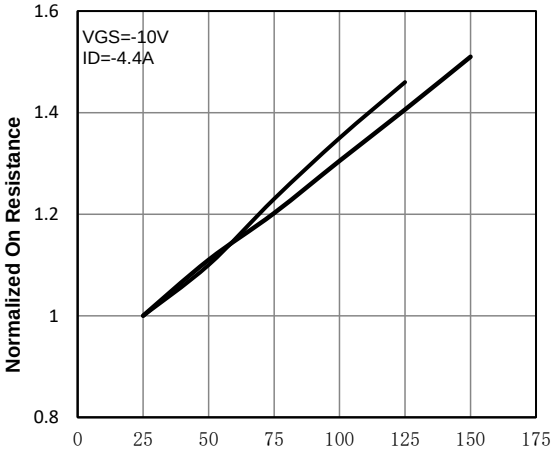
VDS, Drain -Source Voltage (V)

Fig1. Typical Output Characteristics



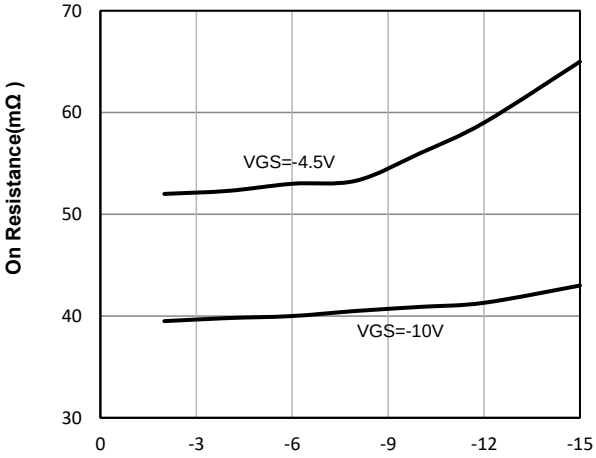
Qg -Total Gate Charge (nC)

Fig2. Typical Gate Charge Vs.Gate-Source Voltag



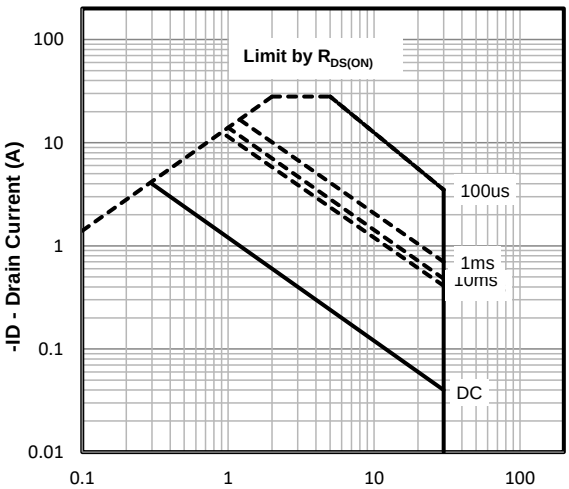
Tj - Junction Temperature (°C)

Fig3. Normalized On-Resistance Vs. Temperature



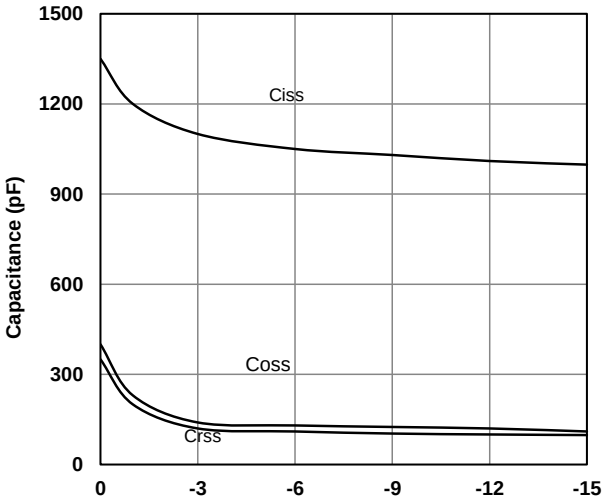
ID, Drain-Source Current (A)

Fig4. On-Resistance Vs. Drain-Source Current



-VDS, Drain -Source Voltage (V)

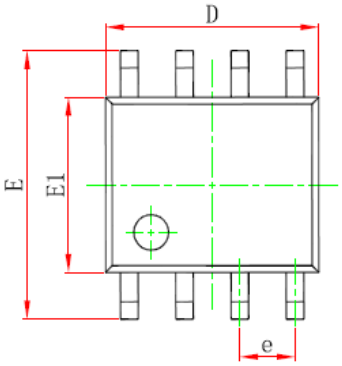
Fig5. Maximum Safe Operating Area

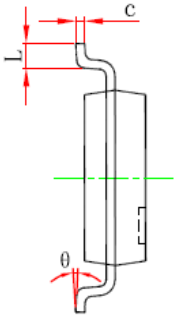


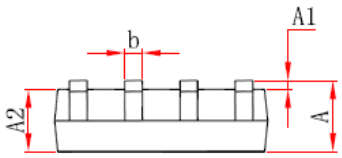
VDS , Drain-Source Voltage (V)

Fig6 Typical Capacitance Vs.Drain-Source Voltage

SOP-8 Package information







Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	**Max**	**Min**	**Max**
A	1.450	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.007	0.010
D	4.700	5.100	0.185	0.201
e	1.270（BSC）		0.050（BSC）	
E	5.800	6.200	0.228	0.244
E1	3.800	4.000	0.150	0.157
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°

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