TECH PUBLIC
台舟电子

IRF7319TRPBF

N/P-Channel Enhancement Mode Power MOSFET

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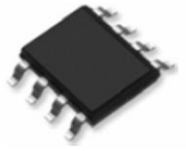
GENERAL FEATURES

N-CH	BV_{DSS}	30V
	$R_{DS(ON)}$	22mΩ
	I_D	7A
P-CH	BV_{DSS}	-30V
	$R_{DS(ON)}$	30mΩ
	I_D	-6.0A

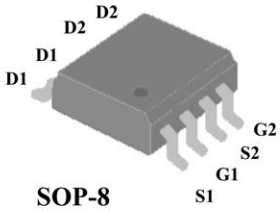
Application

- Battery protection
- Load switch

Package and Pin Configuration



SOP-8 top view



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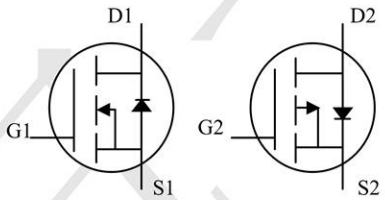
Circuit diagram



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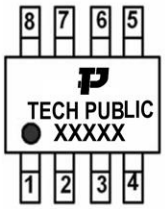


"P" is TECHPUBLIC LOGO

" XXXXX" Marking ID (Please see the last page for details)

Absolute Maximum Ratings (T_A=25℃unless otherwise noted)

PARAMETER		SYMBOL	N-CH LIMIT	P-CH LIMIT	UNITS
Drain-Source Voltage		V_{DS}	30	-30	V
Gate-Source Voltage		V_{GS}	±20		V
Continuous Drain Current (Note 4)	T_A=25°C	I_D	7	-6	A
	T_A=70°C		5.6	-5	A
Pulsed Drain Current (Note 1)	T_C=25°C	I_{DM}	28	-24	A
Power Dissipation	T_A=25°C	P_D	1.7		W
	T_A=70°C		1.1		W
Operating Junction and Storage Temperature Range		T_J,T_{STG}	-55~150		°C
Typical Thermal Resistance Junction to Ambient (Note 4,5)		$R_{\theta JA}$	73.5		°C/W

N-CH Electrical Characteristics (T_A=25℃unless otherwise noted)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNITS
Static						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V, I_D=250uA	30	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250uA	1	1.67	2.5	
Drain-Source On-State Resistance	$R_{DS(on)}$	V_{GS}=10V, I_D=6A	-		22	mΩ
Drain-Source On-State Resistance	$R_{DS(on)}$	V_{GS}=4.5V, I_D=3A	-		28	
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=30V, V_{GS}=0V	-	-	1	uA
Gate-Source Leakage Current	I_{GSS}	V_{GS}=±20V, V_{DS}=0V	-	-	±100	nA
Dynamic (Note 6)						
Total Gate Charge	Q_g	V_{DS}=15V, I_D=8A, V_{GS}=4.5V (Note 2,3)	-	4.8	-	nC
Gate-Source Charge	Q_{gs}		-	1.5	-	
Gate-Drain Charge	Q_{gd}		-	2	-	
Input Capacitance	Ciss	V_{DS}=25V, V_{GS}=0V, f=1MHZ	-	429	-	pF
Output Capacitance	Coss		-	59	-	
Reverse Transfer Capacitance	Crss		-	47	-	
Turn-On Delay Time	$td_{(on)}$	V_{DS}=15V, I_D=1A, V_{GS}=10V, R_G=6Ω (Note 2,3)	-	6.8	-	ns
Turn-On Rise Time	t_r		-	16	-	
Turn-Off Delay Time	$td_{(off)}$		-	27	-	
Turn-Off Fall Time	t_f		-	7.1	-	
Drain-Source Diode						
Maximum Continuous Drain-Source Diode Forward Current	I_S	---	-	-	7	A
Diode Forward Voltage	V_{SD}	I_S=1A, V_{GS}=0V	-	0.74	1	V

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNITS
Static						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V, I_D=-250uA	-30	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=-250uA	-1	-1.53	-2.5	
Drain-Source On-State Resistance	$R_{DS(on)}$	V_{GS}=-10V, I_D=-4A	-		30	mΩ
Drain-Source On-State Resistance	$R_{DS(on)}$	V_{GS}=-4.5V, I_D=-2A	-		45	
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-30V, V_{GS}=0V	-	-	-1	uA
Gate-Source Leakage Current	I_{GSS}	V_{GS}=±20V, V_{DS}=0V	-	-	±100	nA
Dynamic (Note 6)						
Total Gate Charge	Q_g	V_{DS}=-15V, I_D=-4A, V_{GS}=-4.5V (Note 1,2)	-	7.8	-	nC
Gate-Source Charge	Q_{gs}		-	2.7	-	
Gate-Drain Charge	Q_{gd}		-	2.8	-	
Input Capacitance	Ciss	V_{DS}=-15V, V_{GS}=0V, f=1MHZ	-	846	-	pF
Output Capacitance	Coss		-	120	-	
Reverse Transfer Capacitance	Crss		-	76	-	
Turn-On Delay Time	$td_{(on)}$	V_{DS}=-15V, I_D=-1A, V_{GS}=-10V, R_G=6Ω (Note 1,2)	-	3.6	-	ns
Turn-On Rise Time	t_r		-	23	-	
Turn-Off Delay Time	$td_{(off)}$		-	90	-	
Turn-Off Fall Time	t_f		-	50	-	
Drain-Source Diode						
Maximum Continuous Drain-Source Diode Forward Current	I_S	---	-	-	-6	A
Diode Forward Voltage	V_{SD}	I_S=-1A, V_{GS}=0V	-	-0.75	-1	V

Typical Electrical and Thermal Characteristics (Curves)

N-Channel Typical Operating Characteristics

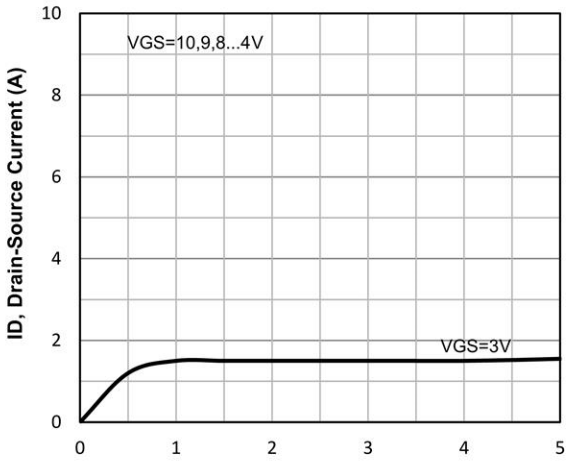


Fig1. Typical Output Characteristics

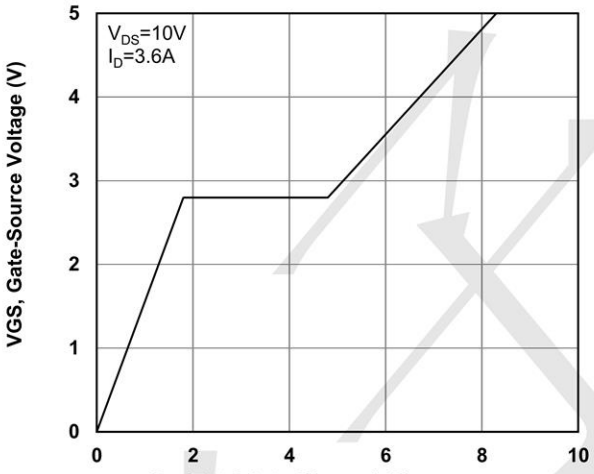


Fig2. Typical Gate Charge Vs.Gate-Source Voltage

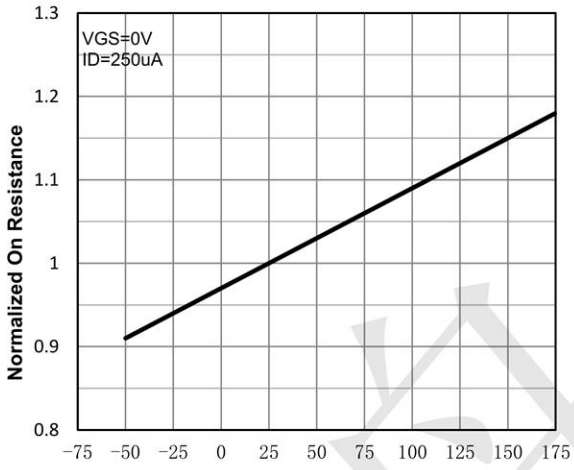


Fig3. Normalized On-Resistance Vs. Temperature

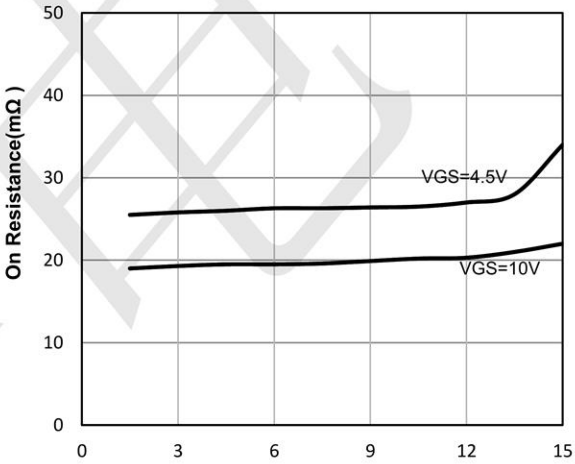


Fig4. On-Resistance Vs. Drain-Source Current

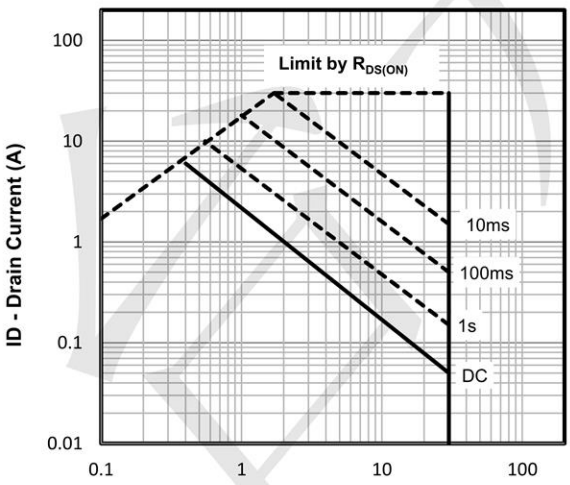


Fig7. Maximum Safe Operating Area

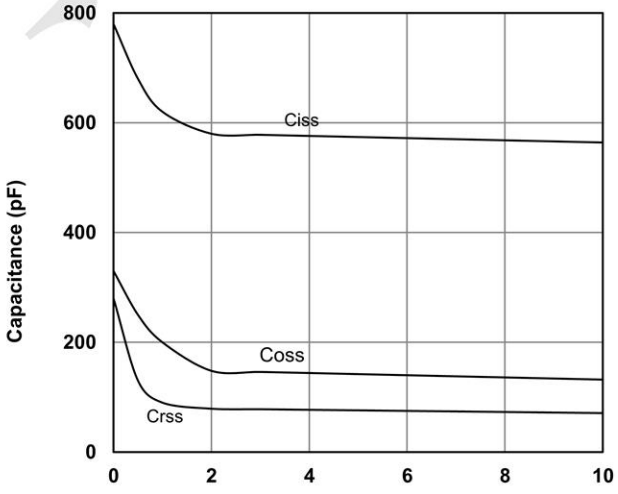
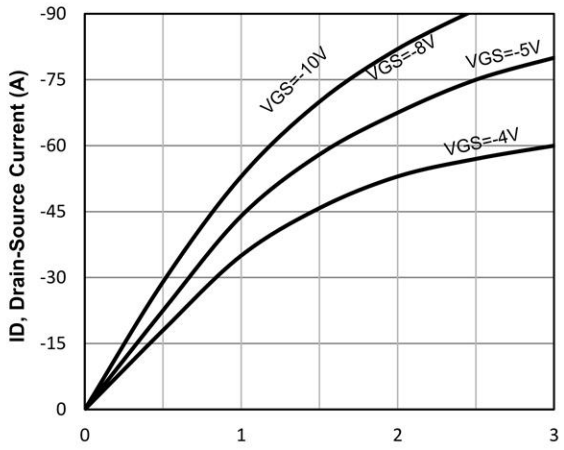
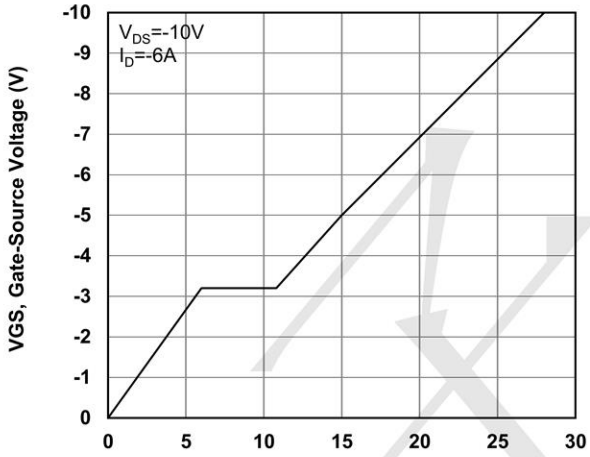


Fig6 Typical Capacitance Vs.Drain-Source Voltage

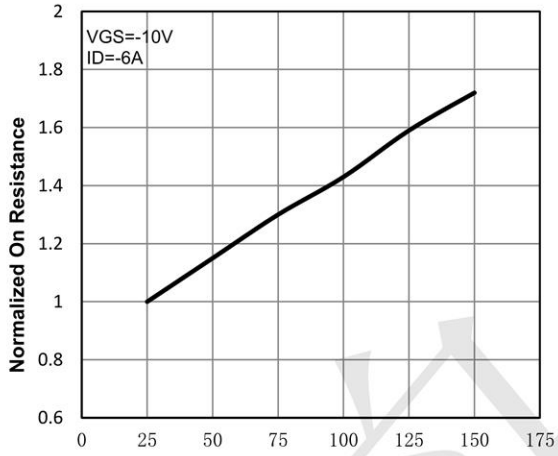
P-Channel Typical Operating Characteristics



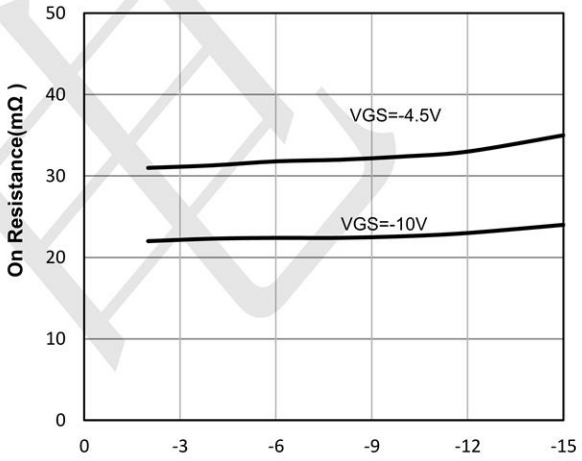
VDS, Drain -Source Voltage (V)
Fig1. Typical Output Characteristics



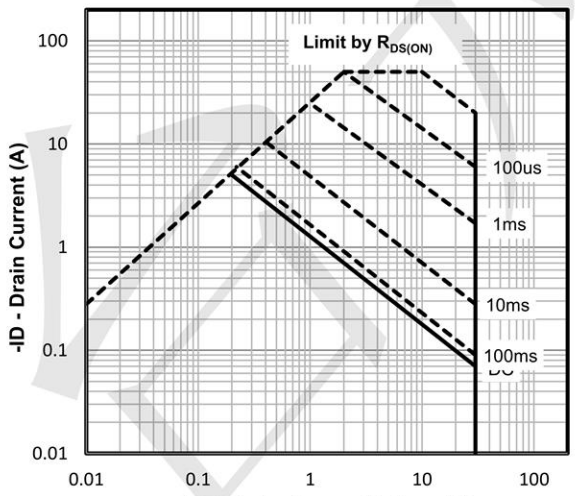
Qg -Total Gate Charge (nC)
Fig2. Typical Gate Charge Vs.Gate-Source Voltage



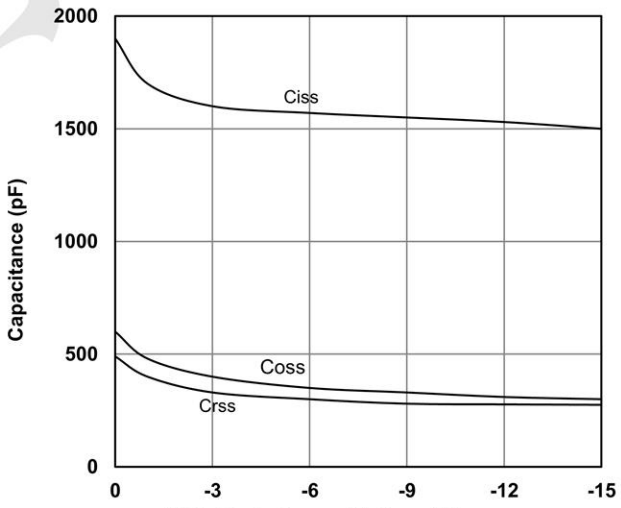
Tj - Junction Temperature (°C)
Fig3. Normalized On-Resistance Vs. Temperature



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

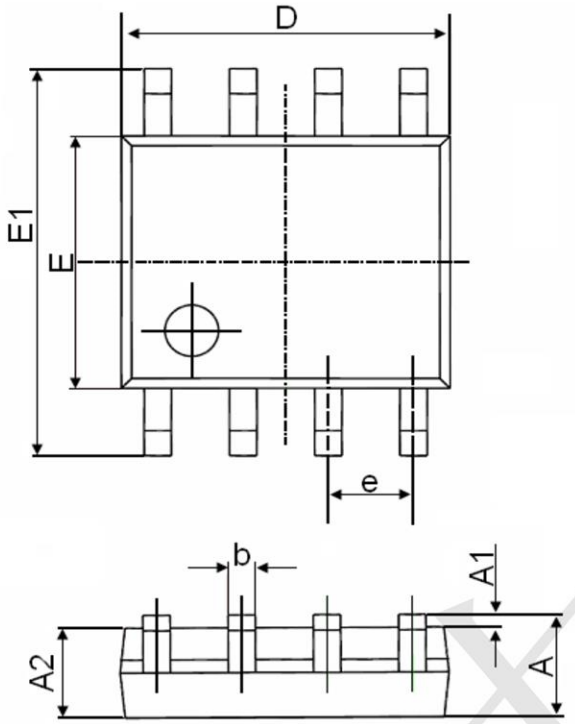


-VDS, Drain -Source Voltage (V)
Fig7. Maximum Safe Operating Area



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	1.350	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	0.006	0.010
D	4.700	5.100	0.185	0.200
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.270(BSC)		0.050(BSC)	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°

Marking:

"P" is TECHPUBLIC LOGO
"NPC" is Part number,fixed
"xx"is internal code