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XP202A0003PR-TP

P-Channel Enhancement MOSFET

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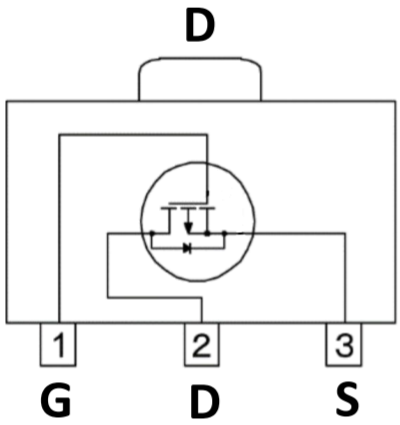
Product Summary

- V_{DS} -30 V
- I_{DS} -7.0A
- $R_{DS\ (ON)}$ (@ V_{GS}=-10V) <40mΩ

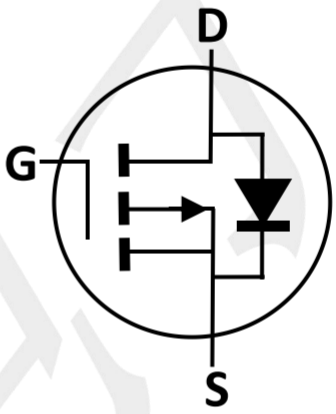
Application

- PWM applications
- Load switch
- Power management

Package and Pin Configuration



Circuit diagram



Equivalent Circuit

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

PARAMETER		SYMBOL	LIMIT	UNIT
Drain-Source Voltage		V_{DS}	-30	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current	T_C=25℃	I_D	-7	A
Pulsed Drain Current		I_{DM}	-21	A
Total Power Dissipation	T_C=25℃	P_{DTOT}	1.5	W
Operating Junction Temperature Range		T_J	-55 to +150	℃
Storage Temperature Range		T_{stg}	-55 to +150	℃

Note : When mounted on 1" square PCB (FR4 material).

Thermal Characteristic

PARAMETER		Symbol	Value	Unit
Junction-to-Ambient Thermal Resistance	PCB Mount (Note)	R_{thJA}	83	°C/W

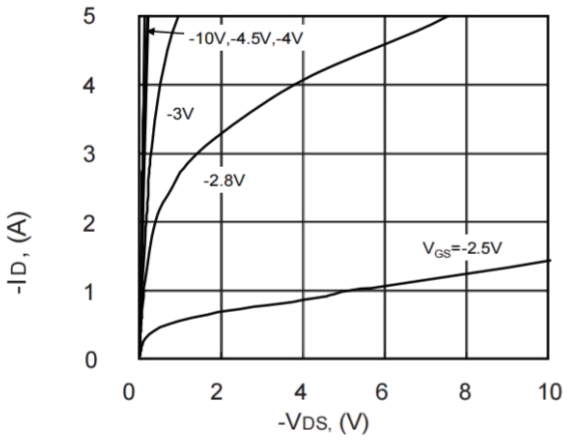
Electrical Characteristics (T_A=25℃unless otherwise noted)

PARAMETER	CONDITIONS	SYMBOL	MIN	TYP	MAX	UNIT
Static						
Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=-250uA	BV_{DSS}	-30	--	--	V
Gate-Source Threshold Voltage	V_{DS}=V_{GS} , I_D= -250uA	$V_{GS(th)}$	-1.0	-1.5	-2.5	V
Gate-Source Leakage	V_{DS}=0V, V_{GS}= ±20V	I_{GSS}	--	--	±100	nA
Zero Gate Voltage Drain Current	V_{DS}= -24V, V_{GS}=0V	I_{DSS}	--	--	-1	μA
Drain-Source On-State Resistance (Note 1)	V_{GS}= -10V, I_D= -7A	R_{DS}(on)	--	27	35	mΩ
	V_{GS}= -4.5V, I_D= -4A		--	37	40	
Forward Transconductance (Note 2)	V_{DS}= -5V, I_D= -4.6A	g_{fs}	--	10	--	S
Dynamic (Note 2)						
Total Gate Charge (Note 3)	V_{DS} = -15V, I_D = -5A, V_{GS} = -5V	Q_g	--	13	--	nC
Gate-Source Charge (Note 3)		Q_{gs}	--	3.5	--	
Gate-Drain Charge (Note 3)		Q_{gd}	--	4.5	--	
Input Capacitance	V_{DS} = -55V, V_{GS} = 0V, F= 1.0MHz	C_{iss}	--	950	--	pF
Output Capacitance		C_{oss}	--	100	--	
Reverse Transfer Capacitance		C_{rss}	--	95	--	
Switching						
Turn-On Delay Time (Note 3)	V_{DD} = -15V, R_L = 6Ω, V_{GS} = -10V, R_{GEN} = 10Ω	$t_{d(on)}$	--	10	--	nS
Rise Time (Note 3)		t_r	--	15	--	
Turn-Off Delay Time (Note 3)		$t_{d(off)}$	--	90	--	
Fall Time (Note 3)		t_f	--	50	--	
Source-Drain Diode Ratings and Characteristics (Note 2)						
Forward Voltage	V_{GS} = 0V, I_F = -4.6A	V_{SD}	--	-0.8	-1.2	V
Continuous Source Current	Integral reverse diode in the MOSFET	I_S	--	--	-7	A
Pulsed Current (Note 1)		I_{SM}	--	--	-21	A

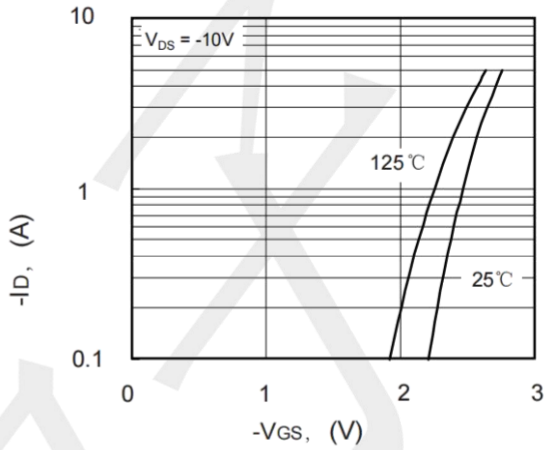
Notes:

1. Pulse test; pulse width ≤ 300 μS, duty cycle ≤ 2%.
2. Guaranteed by design, not subject to production testing.
3. Independent of operating temperature

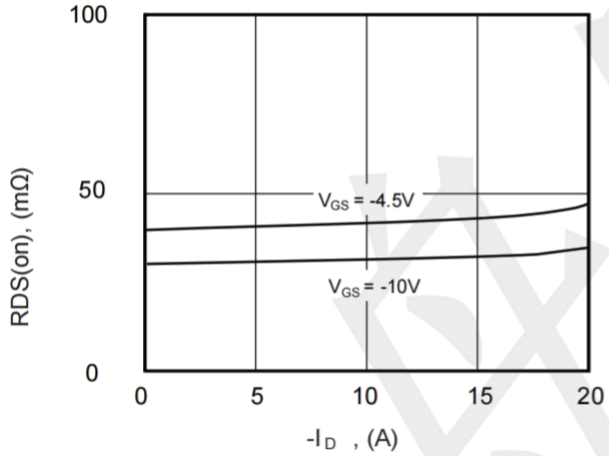
TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



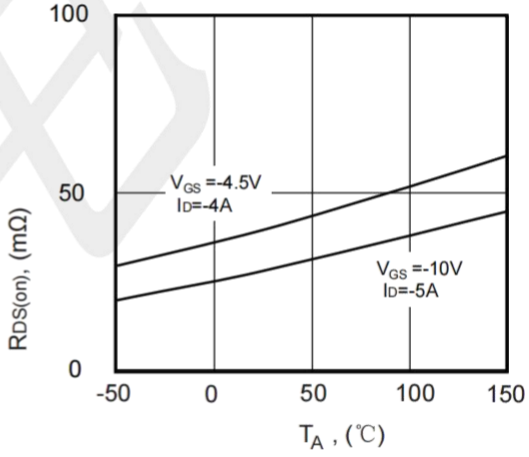
Typical Output Characteristics



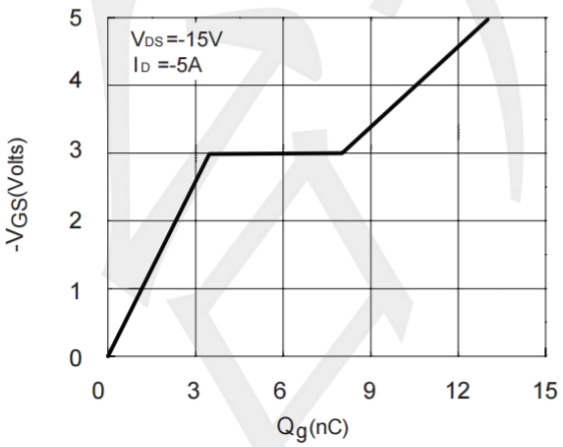
Transfer characteristics



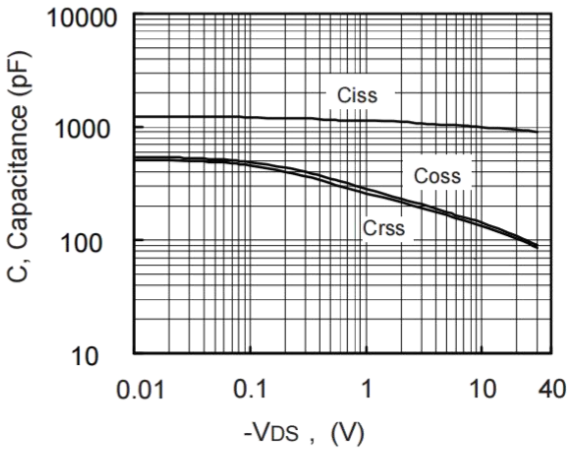
On-Resistance vs. Drain Current



On-Resistance vs. Ambient temperature



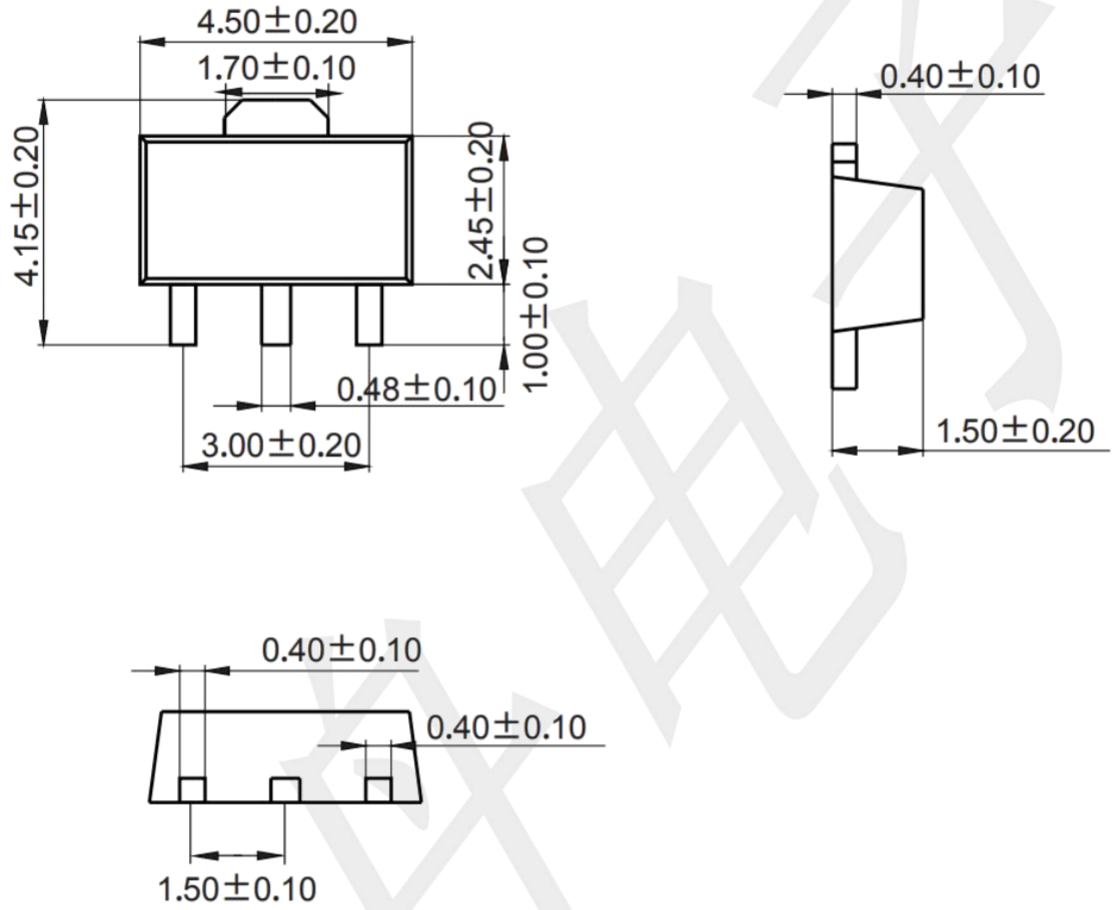
Gate Charge Characteristics



Capacitance Characteristics

Package Information -(unit: mm)

SOT89-3



Mounting Pad Layout (unit: mm)