XP132A01A0SR Power MOS FET

◆ **P-Channel Power MOS FET**
◆ **DMOS Structure**
◆ **Low On-State Resistance: 0.105Ω MAX**
◆ **Ultra High-Speed Switching**
◆ **SOP-8 Package**

■ Applications
● Notebook PCs
● Cellular and portable phones
● On-board power supplies
● Li-ion battery systems

■ General Description

The XP132A01A0SR is a P-Channel Power MOS FET with low on-state resistance and ultra high-speed switching characteristics.
Because high-speed switching is possible, the IC can be efficiently set thereby saving energy.
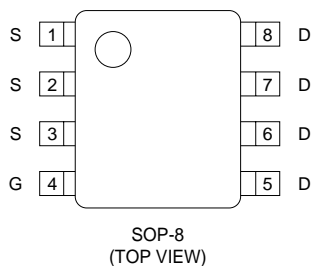The small SOP-8 package makes high density mounting possible.

■ Features

Low on-state resistance: $Rds(on)=0.075\Omega(Vgs=-10V)$
$Rds(on)=0.105\Omega(Vgs=-5.5V)$
Ultra high-speed switching
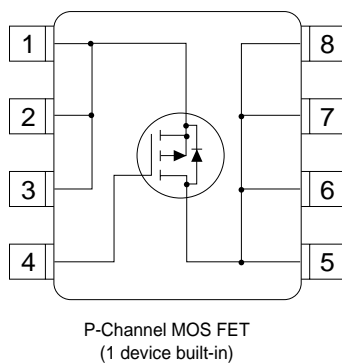**Operational Voltage:** -5.5V
High density mounting: SOP-8

■ Pin Configuration

S 1   8 D
S 2   7 D
S 3   6 D
G 4   5 D

SOP-8
(TOP VIEW)

■ Pin Assignment

PIN NUMBER	PIN NAME	FUNCTION
1~3	S	Source
4	G	Gate
5~8	D	Drain

■ Equivalent Circuit

P-Channel MOS FET
(1 device built-in)

■ Absolute Maximum Ratings

Ta=25℃

PARAMETER	SYMBOL	RATINGS	UNITS
Drain-Source Voltage	Vdss	-30	V
Gate-Source Voltage	Vgss	±20	V
Drain Current (DC)	Id	-5	A
Drain Current (Pulse)	Idp	-15	A
Reverse Drain Current	Idr	-5	A
Continuous Channel Power Dissipation (note)	Pd	2.5	W
Channel Temperature	Tch	150	℃
Storage Temperature	Tstg	-55~150	℃

Note: When implemented on a glass epoxy PCB

■ Electrical Characteristics

DC characteristics

Ta=25℃

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNITS
Drain Cut-off Current	Idss	Vds=-30V, Vgs=0V			-10	μA
Gate-Source Leakage Current	Igss	Vgs=±20V, Vds=0V			±10	μA
Gate-Source Cut-off Voltage	Vgs(off)	Id=-1mA, Vds=-10V	-1.0		-2.5	V
Drain-Source On-state Resistance (note)	Rds(on)	Id=-3A, Vgs=-10V			0.075	Ω
		Id=-1A, Vgs=-5.5V			0.105	Ω
Forward Transfer Admittance (note)	|Yfs|	Id=-3A, Vds=-10V		5		S
Body Drain Diode Forward Voltage	Vf	If=-5A, Vgs=0V		-0.85	-1.1	V

Note: Effective during pulse test.

Dynamic characteristics

Ta=25℃

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNITS
Input Capacitance	Ciss	Vds=-10V, Vgs=0V f=1MHz		780		pF
Output Capacitance	Coss			560		pF
Feedback Capacitance	Crss			200		pF

Switching characteristics

Ta=25℃

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNITS
Turn-on Delay Time	td (on)	Vgs=-5V, Id=-3A Vdd=-10V		20		ns
Rise Time	tr			25		ns
Turn-off Delay Time	td (off)			30		ns
Fall Time	tf			20		ns

Thermal characteristics

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNITS
Thermal Resistance (channel-surroundings)	Rth (ch-a)	Implement on a glass epoxy resin PCB		50		˚C/W

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■ Electrical Characteristics

Drain Current vs. Drain /Source Voltage

Pulse Test, Ta=25℃

Drain Current:Id (A) vs Drain/Source Voltage:Vds (V)

Curves labeled: -10V, -5V, -4.5V, -4V, -3.5V, -3V, Vgs=-2.5V
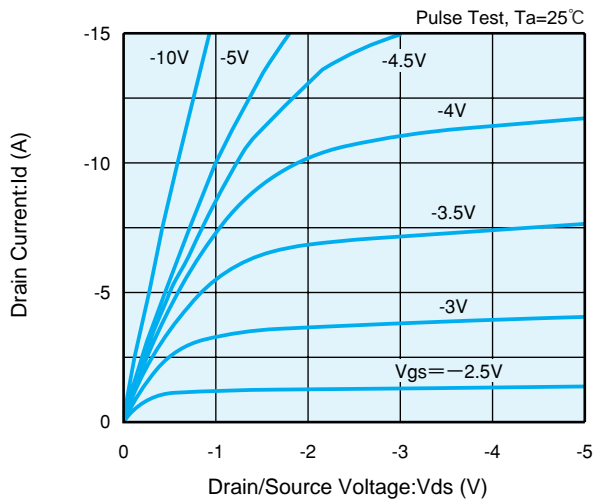
Drain Current vs. Gate/Source Voltage

Pulse Test

Drain Current:Id (A) vs Gate/Source Voltage:Vgs (V)

Topr=25 ℃, 125 ℃, -55 ℃
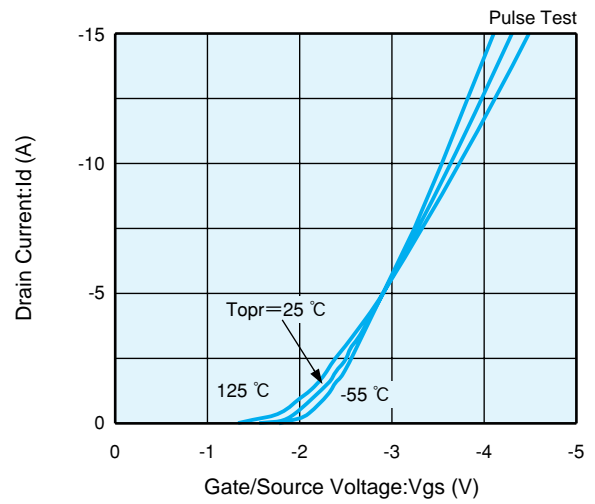
Drain/Source On-State Resistance vs. Gate/Source Voltage

Pulse Test, Ta=25℃

Drain/Source On-State Resistance :Rds (on) (Ω) vs Gate/Source Voltage:Vgs (V)

Id=-3A, -5A
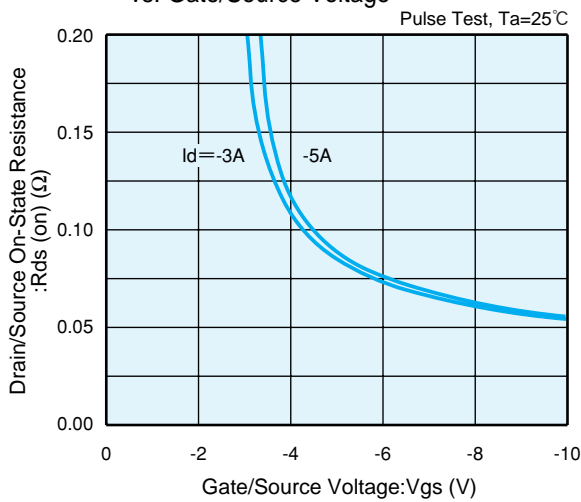
Drain/Source On-State Resistance vs. Drain Current

Pulse Test, Ta=25℃

Drain/Source On-State Resistance :Rds (on) (Ω) vs Drain Current:Id (A)

Vgs=-5V, -10V
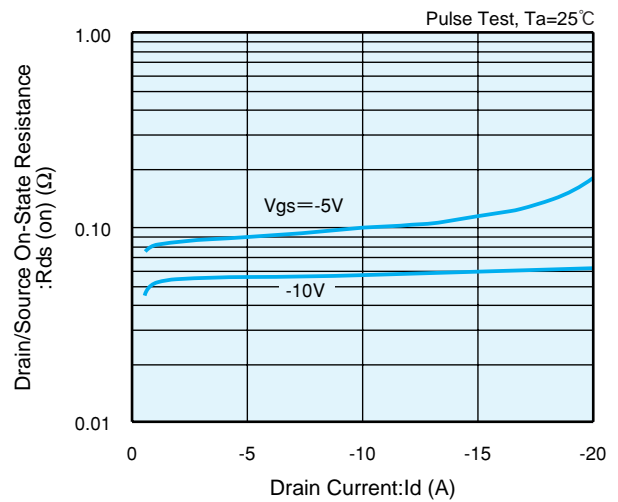
Drain/Source On-State Resistance vs. Ambient Temp.

Pulse Test

Drain/Source On-State Resistance :Rds (on) (Ω) vs Ambient Temperature:Topr (℃)

Id=-5A, Vgs=-5V, -3A, -3A,-5A, -10V
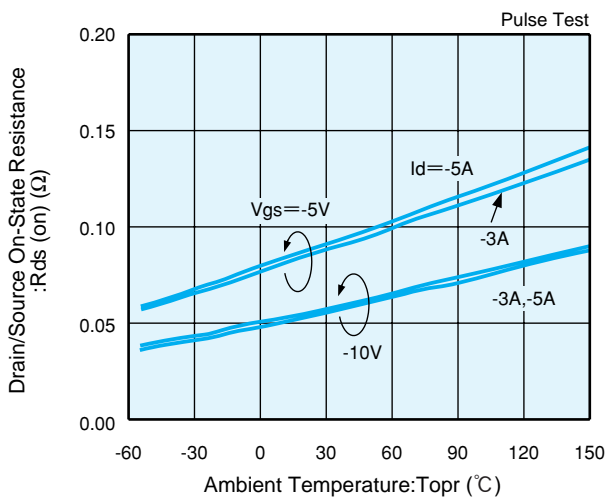
Gate/Source Cut Off Voltage Variance vs. Ambient Temp.

Vds=-10V, Id=-1mA

Gate/Source Cut Off Voltage Variance :Vgs (off) Variance (V) vs Ambient Temperature:Topr (℃)

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375
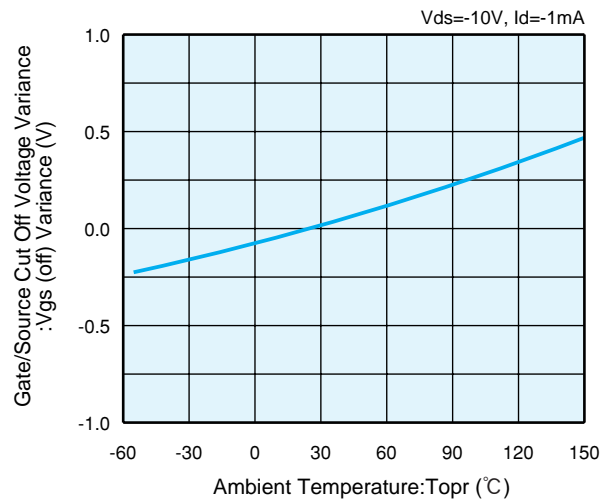
■ Electrical Characteristics

Drain/Source Voltage vs. Capacitance

Vgs=0V, f=1MHz

Capacitance:Ciss, Coss, Crss (pF) vs. Drain/Source Voltage:Vds (V)

Ciss
Coss
Crss
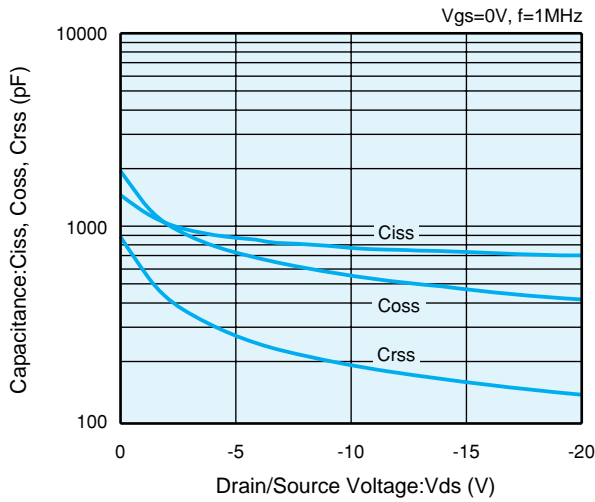
Switching Time vs. Drain Current

Vgs=-5V, Vdd≒-10V, PW=10μsec. duty≦1%

Switching Time:t (ns) vs. Drain Current:Id (A)

tf
td (off)
td (on)
tr
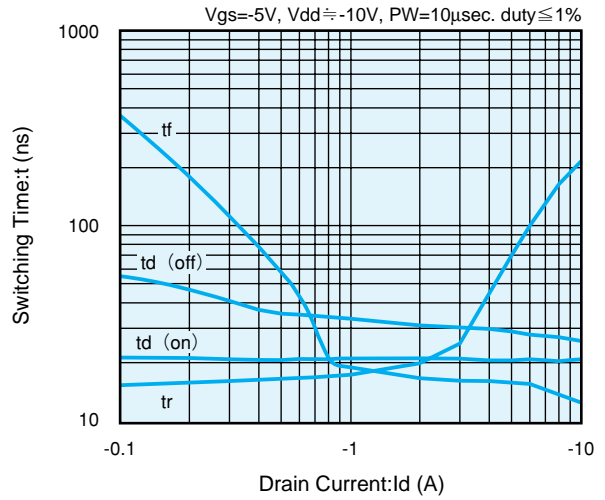
Gate/Source Voltage vs. Gate Charge

Vds=-10V, Id=-5A

Gate/Source Voltage:Vgs (V) vs. Gate Charge:Qg (nc)
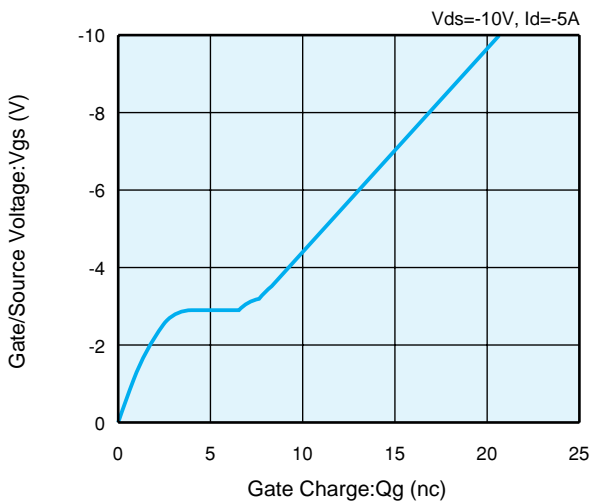
Reverse Drain Current vs. Source/Drain Voltage

Pulse Test

Reverse Drain Current:Id (A) vs. Source/Drain Voltage:Vsd (V)

Vgs=-5V
0.5V
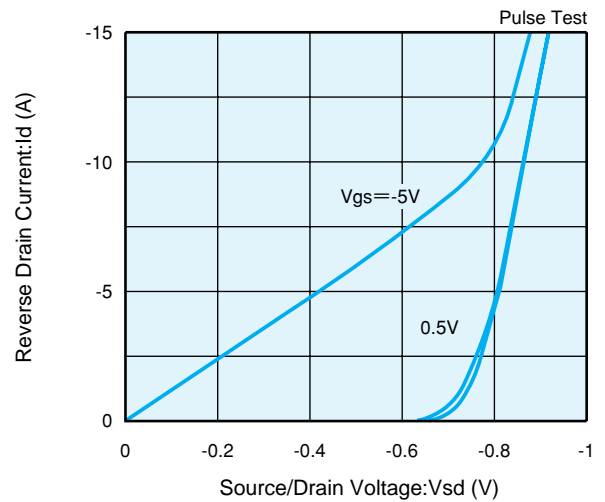
Standardized Transition Thermal Resistance vs. Pulse Width

Rth (ch-a)=50℃/W, (Implemented on a glass epoxy PCB)

Standardized Transition Thermal Resistance: γs(t) vs. Pulse Width:PW (sec)

Single Pulse