

- ◆ P-Channel Power MOS FET
- ◆ DMOS Structure
- ◆ Low On-State Resistance : 0.11Ω (max)
- ◆ Ultra High-Speed Switching
- ◆ SOP - 8 Package

Applications

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

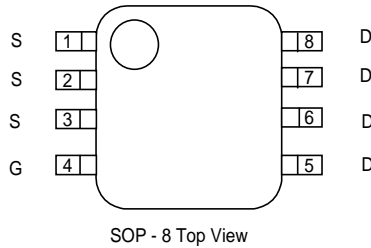
General Description

The XP132A11A1SR 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** : $R_{ds(on)} = 0.065\Omega$ ($V_{gs} = -10V$)
 $R_{ds(on)} = 0.11\Omega$ ($V_{gs} = -4.5V$)
- Ultra high-speed switching**
- Operational Voltage** : -4.5V
- High density mounting** : SOP - 8

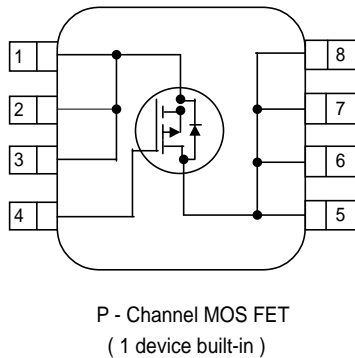
Pin Configuration



Pin Assignment

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

Equivalent Circuit



Absolute Maximum Ratings

$T_a = 25^\circ\text{C}$			
PARAMETER	SYMBOL	RATINGS	UNITS
Drain - Source Voltage	V_{dss}	- 30	V
Gate - Source Voltage	V_{gss}	± 20	V
Drain Current (DC)	I_d	- 5	A
Drain Current (Pulse)	I_{dp}	- 20	A
Reverse Drain Current	I_{dr}	- 5	A
Continuous Channel Power Dissipation (note)	P_d	2.5	W
Channel Temperature	T_{ch}	150	$^\circ\text{C}$
Storage Temperature	T_{stg}	- 55 to 150	$^\circ\text{C}$

(note) : When implemented on a glass epoxy PCB

Electrical Characteristics

DC characteristics

Ta=25°C

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNITS
Drain Cut-off Current	Idss	Vds = - 30 , Vgs = 0V			- 10	μA
Gate-Source Leakage Current	Igss	Vgs = ± 20 , Vds = 0V			±1	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		0.055	0.065	Ω
		Id = - 3A , Vgs = - 4.5V		0.095	0.11	Ω
Forward Transfer Admittance (note)	Yfs	Id = - 3A , Vds = - 10V		6		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°C

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNITS
Input Capacitance	Ciss	Vds = - 10V , Vgs = 0V f = 1 MHz		680		pF
Output Capacitance	Coss			450		pF
Feedback Capacitance	Crss			170		pF

Switching characteristics

Ta=25°C

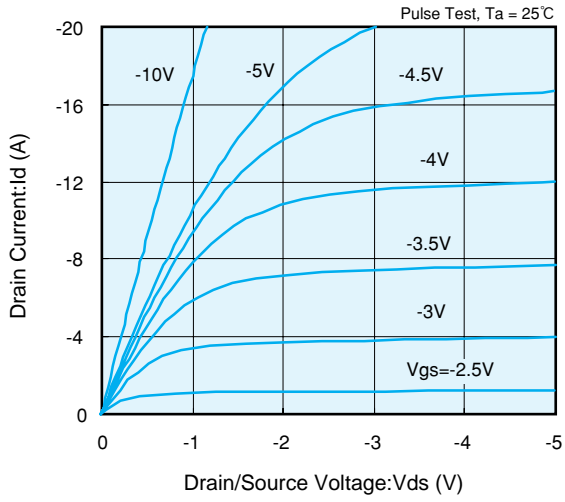
PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNITS
Turn-on Delay Time	td (on)	Vgs = - 5V , Id = - 3A Vdd = - 10V		15		ns
Rise Time	tr			20		ns
Turn-off Delay Time	td (off)			30		ns
Fall Time	tf			20		ns

Thermal characteristics

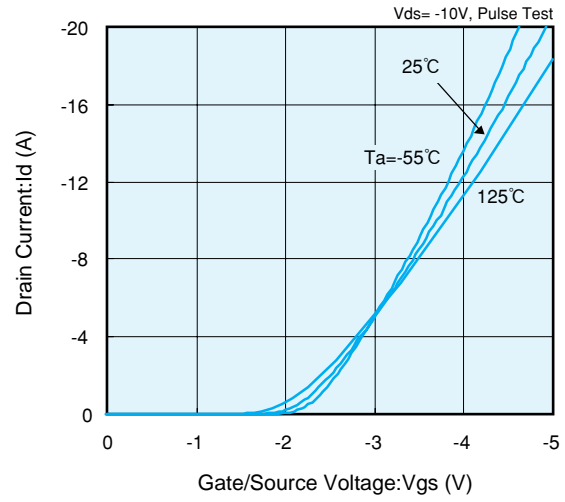
PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNITS
Thermal Resistance (channel - surroundings)	Rth (ch - a)	Implement on a glass epoxy resin PCB		50		°C / W

Electrical Characteristics

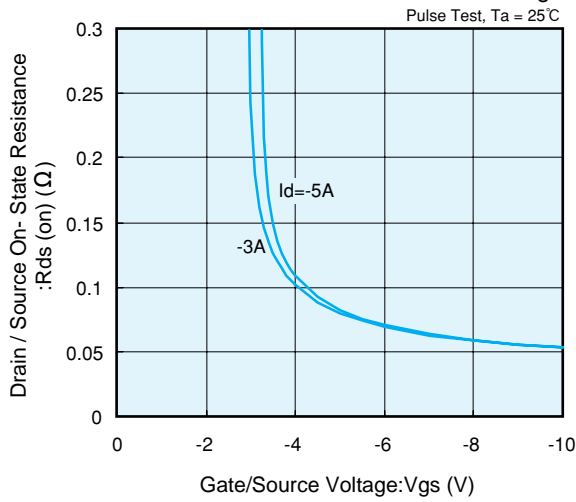
Drain Current vs. Drain / Source Voltage



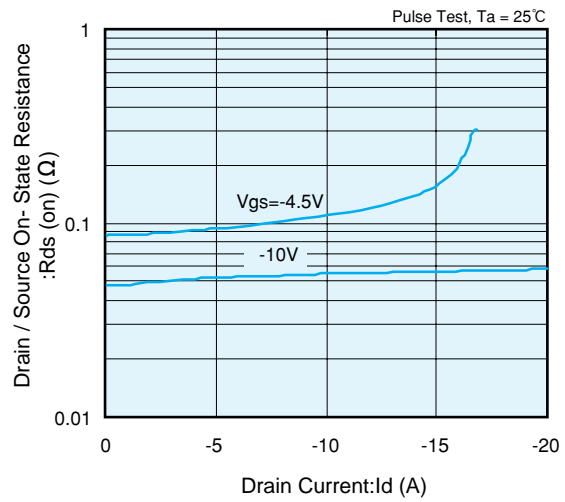
Drain Current vs. Gate / Source Voltage



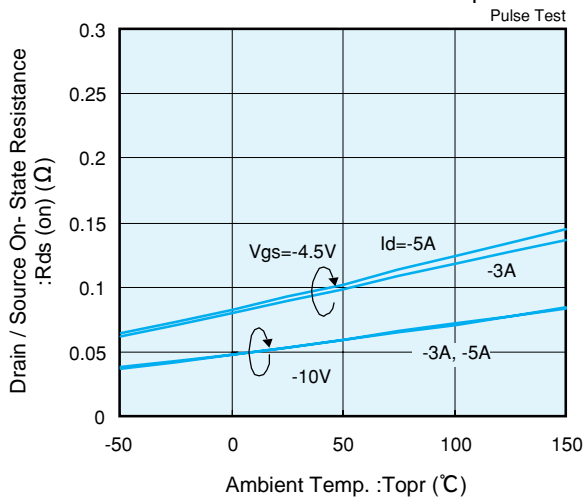
Drain / Source On-State Resistance vs. Gate / Source Voltage



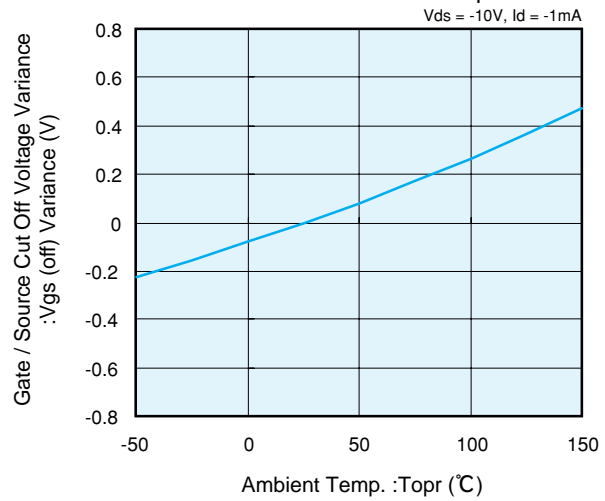
Drain / Source On-State Resistance vs. Drain Current



Drain / Source On-State Resistance vs. Ambient Temperature

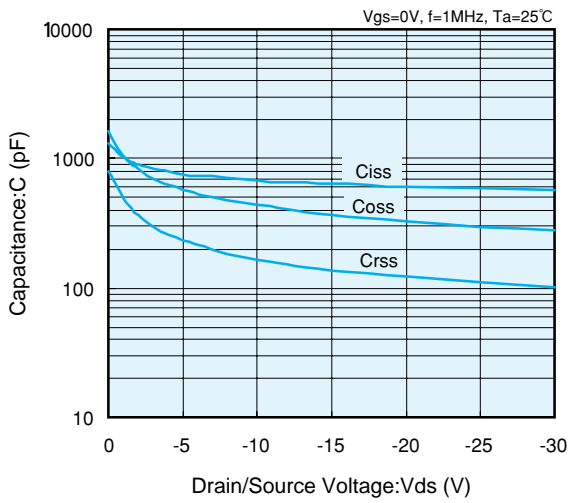


Gate / Source Cut Off Voltage Variance vs. Ambient Temperature

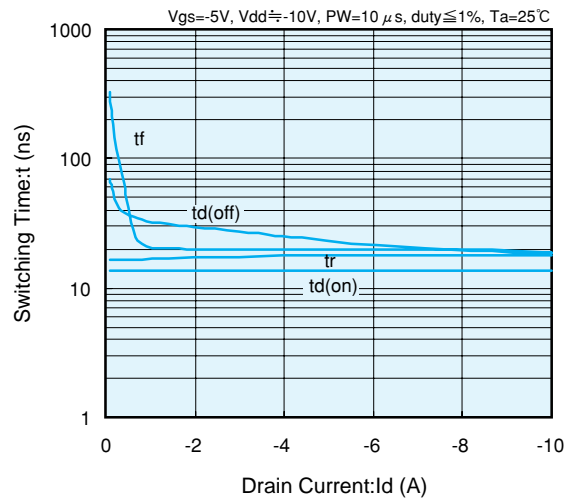


Electrical Characteristics

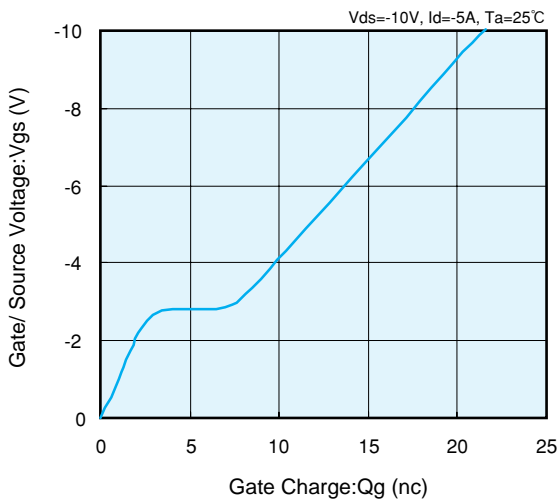
Drain / Source Voltage vs. Capacitance



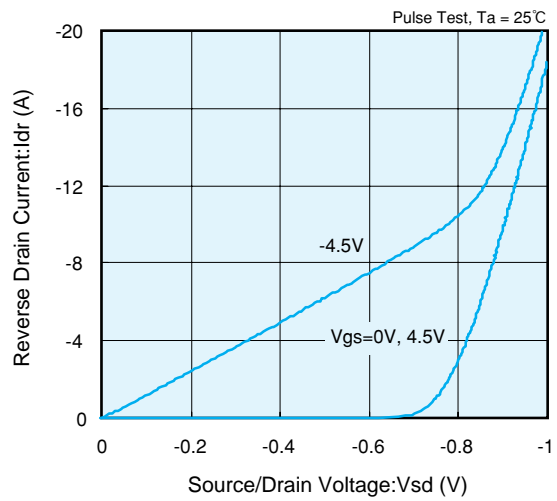
Switching Time vs. Drain Current



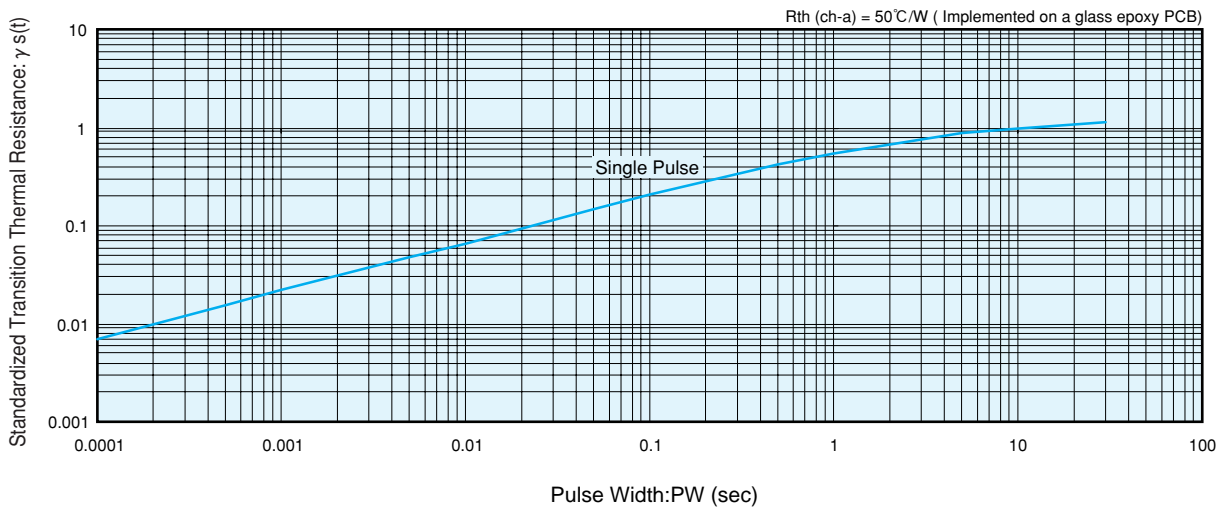
Gate / Source Voltage vs. Gate Charge



Reverse Drain Current vs. Source / Drain Voltage



Standardized Transition Thermal Resistance vs. Pulse Width



7