XP132A1275SR Power MOS FET

◆ **P-Channel Power MOS FET**
◆ **DMOS Structure**
◆ **Low On-State Resistance : 0.075Ω (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 XP132A1275SR 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) = 0.075Ω (Vgs = -4.5V)
Rds (on) = 0.115Ω (Vgs = -2.5V)
Ultra high-speed switching
**Operational Voltage :** -2.5V
High density mounting : SOP - 8

■ **Pin Configuration**

SOP - 8 Top View
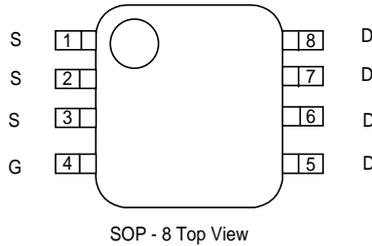
■ **Pin Assignment**

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)
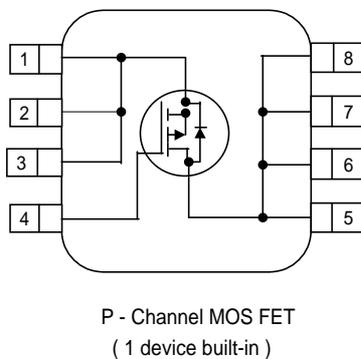
■ **Absolute Maximum Ratings**

Ta=25°C

PARAMETER	SYMBOL	RATINGS	UNITS
Drain - Source Voltage	Vdss	-20	V
Gate - Source Voltage	Vgss	± 12	V
Drain Current (DC)	Id	-5	A
Drain Current (Pulse)	Idp	-20	A
Reverse Drain Current	Idr	-5	A
Continuous Channel Power Dissipation (note)	Pd	2.5	W
Channel Temperature	Tch	150	°C
Storage Temperature	Tstg	-55 to 150	°C

(note) : When implemented on a glass epoxy PCB

TOREX

■ Electrical Characteristics

DC characteristics

Ta=25°C

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNITS
Drain Cut-off Current	Idss	Vds = - 20 , Vgs = 0V			- 10	μA
Gate-Source Leakage Current	Igss	Vgs = ± 12 , Vds = 0V			± 1	μA
Gate-Source Cut-off Voltage	Vgs (off)	Id = -1mA , Vds = - 10V	- 0.5		- 1.2	V
Drain-Source On-state Resistance (note)	Rds (on)	Id = - 3A , Vgs = - 4.5V		0.06	0.075	Ω
		Id = - 3A , Vgs = - 2.5V		0.092	0.115	Ω
Forward Transfer Admittance (note)	| Yfs |	Id = - 3A , Vds = - 10V		8		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			770		pF
Output Capacitance	Coss	Vds = - 10V , Vgs = 0V		440		pF
Feedback Capacitance	Crss	f = 1 MHz		180		pF

Switching characteristics

Ta=25°C

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNITS
Turn-on Delay Time	td (on)			10		ns
Rise Time	tr	Vgs = - 5V , Id = - 3A		25		ns
Turn-off Delay Time	td (off)	Vdd = - 10V		45		ns
Fall Time	tf			40		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

Pulse Test, Ta=25℃

-5V
-4.5V
-4V
-3.5V
-3V
-2.5V
-2V
Vgs=-1.5V

Drain Current :Id (A)

Drain / Source Voltage :Vds (V)
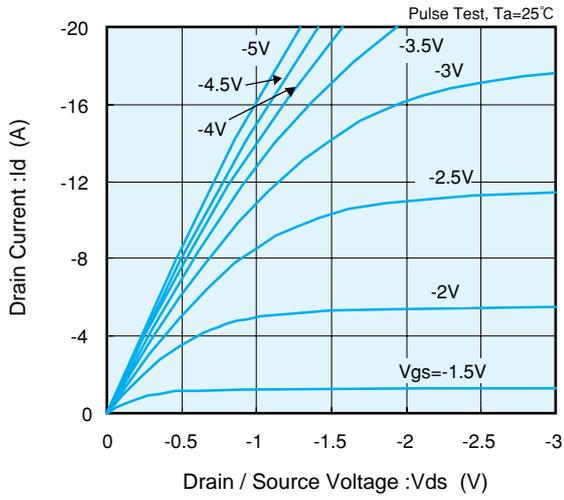
Drain Current vs. Gate/Source Voltage

Vds=-10V, Pulse Test

Ta=-55℃
25℃
125℃

Drain Current :Id (A)

Gate / Source Voltage :Vgs (V)
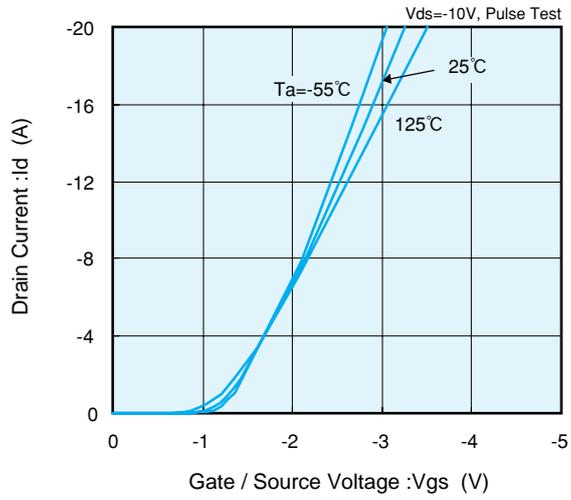
Drain/Source On-State Resistance vs. Gate/Source Voltage

Pulse Test, Ta=25℃

Id=-5A
-3A

Drain/Source On-State Resistance :Rds (on) (Ω)

Gate/Source Voltage :Vgs (V)
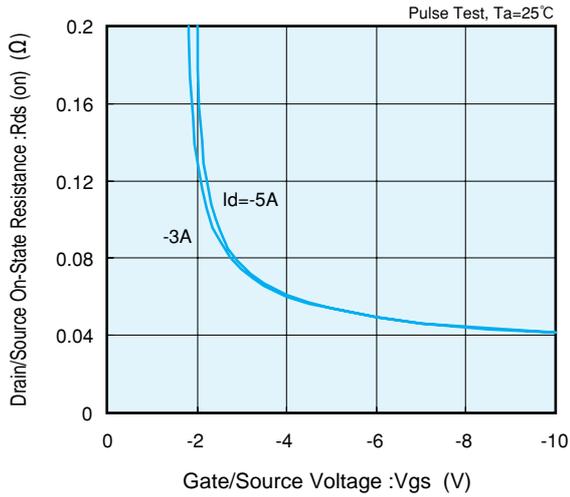
Drain/Source On-State Resistance vs. Drain Current

Pulse Test, Ta=25℃

Vgs=-2.5V
-4.5V

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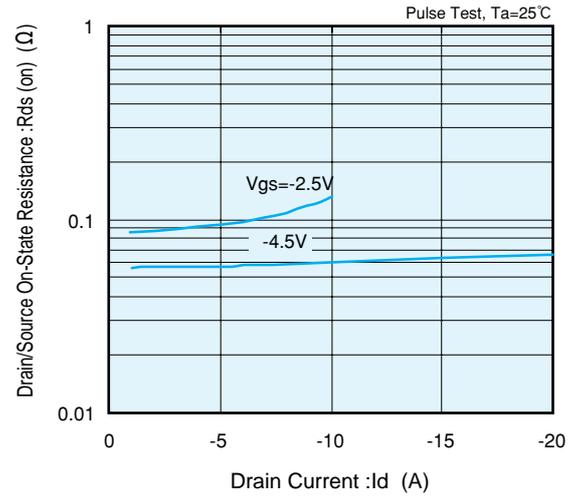
Drain Current :Id (A)

Drain / Source On-State Resistance vs. Ambient Temp.

Pulse Test

Id=-5A
Vgs=-2.5V
-3A
-4.5V
-3A, -5A

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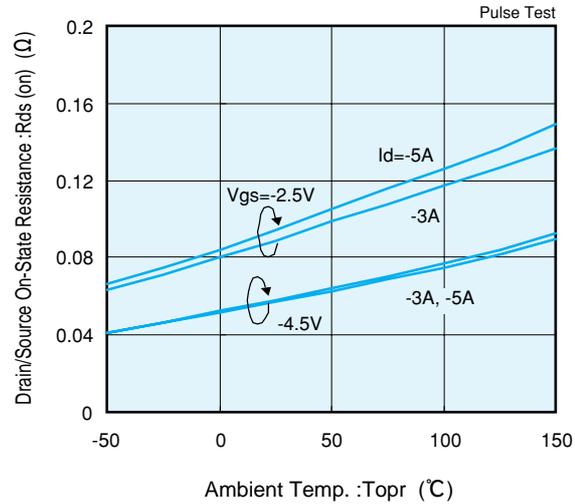
Ambient Temp. :Topr (℃)

Gate / Source Cut Off Voltage Variance vs. Ambient Temp.

Vds=-10V, Id=-1mA

Gate/Source Cut Off Voltage Variance :Vgs (off) Variance (V)

Ambient Temp. :Topr (℃)

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Ⓣ TOREX
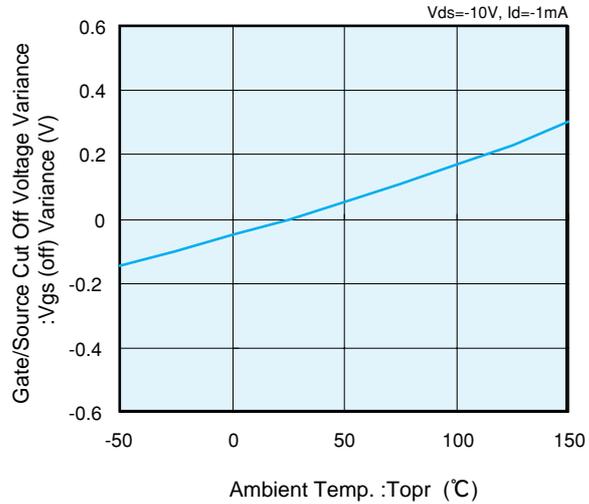
■ Electrical Characteristics

Capacitance vs. Drain/Source Voltage

Vgs=0V, f=1MHz, Ta=25℃

Capacitance:C (pF) vs. Drain/Source Voltage:Vds (V)

Ciss
Coss
Crss
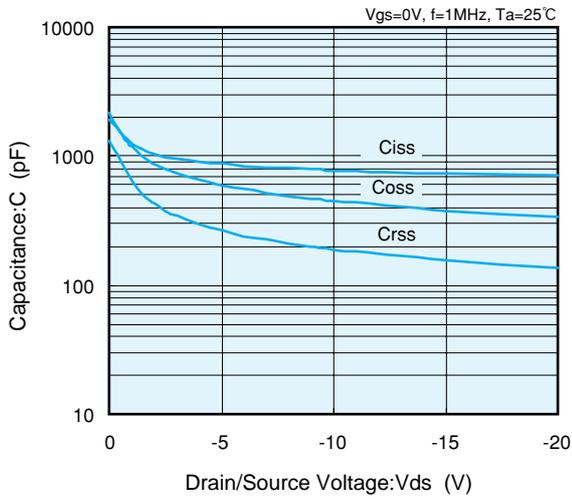
Switching Time vs. Drain Current

Vgs=-5V, Vdd≒-10V, PW=10 μs, duty≦1%, Ta=25℃

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

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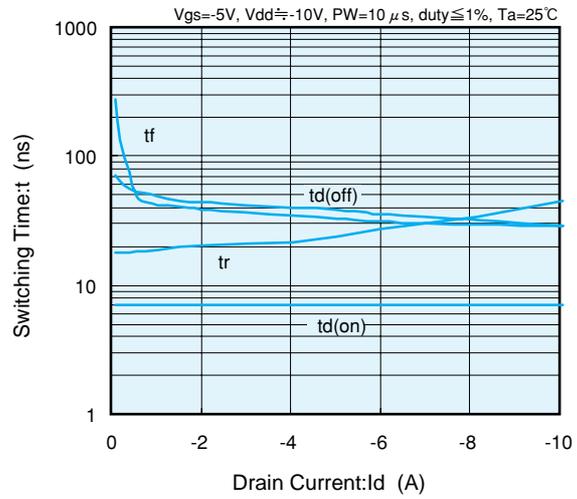
Gate/Source Voltage vs. Gate Charge

Vds=-10V, Id=-5A, Ta=25℃

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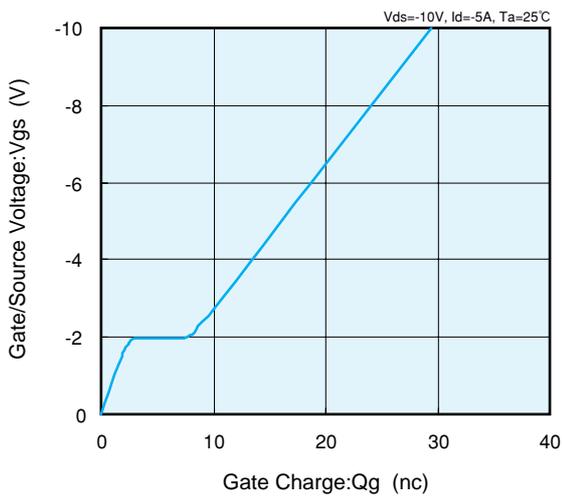
Reverse Drain Current vs. Source/Drain

Ta=25℃, Pulse Test

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

-4.5V
-2.5V
Vgs=0V,4.5V
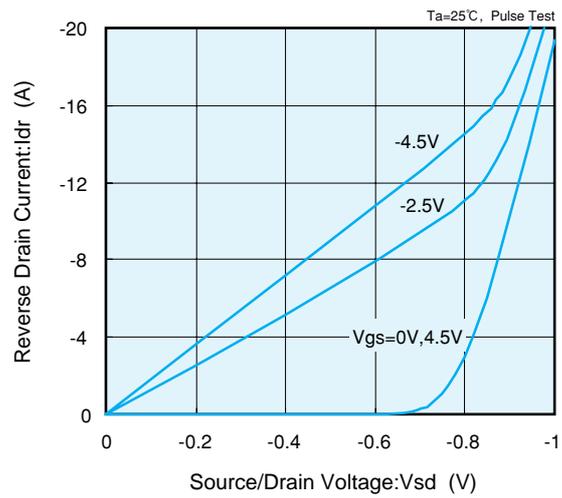
Standardized Transition Thermal Resistance vs. Pulse Width

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

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

Single Pulse

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