

# XP134A1275SR



## Power MOS FET

- ◆ P-Channel Power MOS FET
- ◆ DMOS Structure
- ◆ Low On-State Resistance :  $0.075\Omega$  (max)
- ◆ Ultra High-Speed Switching
- ◆ SOP-8 Package
- ◆ 2 FET Devices Built-in

### General Description

The XP134A1275SR is a P-Channel Power MOS FET with low on-state resistance and ultra high-speed switching characteristics.

Two FET devices are built-into the one package.

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.

### Applications

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

### Features

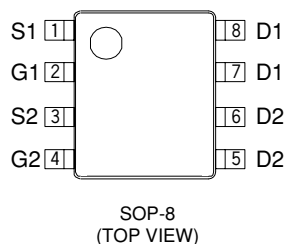
**Low on-state resistance** :  $R_{ds(on)} = 0.075\Omega$  ( $V_{gs} = -4.5V$ )  
 :  $R_{ds(on)} = 0.115\Omega$  ( $V_{gs} = -2.5V$ )

**Ultra high-speed switching**

**Operational Voltage** :  $-2.5V$

**High density mounting** : SOP-8

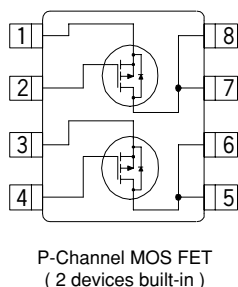
### Pin Configuration



### Pin Assignment

PIN NUMBER	PIN NAME	FUNCTION
1	S1	Source
2	G1	Gate
3	S2	Source
4	G2	Gate
5~6	D2	Drain
7~8	D1	Drain

### Equivalent Circuit



### Absolute Maximum Ratings

$T_a = 25^\circ C$			
PARAMETER	SYMBOL	RATINGS	UNITS
Drain - Source Voltage	$V_{dss}$	- 20	V
Gate - Source Voltage	$V_{gss}$	$\pm 12$	V
Drain Current (DC)	$I_d$	- 4.5	A
Drain Current (Pulse)	$I_{dp}$	- 18	A
Reverse Drain Current	$I_{dr}$	- 4.5	A
Continuous Channel Power Dissipation (note)	$P_d$	2	W
Channel Temperature	$T_{ch}$	150	$^\circ C$
Storage Temperature	$T_{stg}$	- 55 ~ 150	$^\circ C$

( 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	I <sub>dss</sub>	V <sub>ds</sub> = - 20V , V <sub>gs</sub> = 0V			- 10	μA
Gate-Source Leakage Current	I <sub>gss</sub>	V <sub>gs</sub> = ± 12V , V <sub>ds</sub> = 0V			± 1	μA
Gate-Source Cut-off Voltage	V <sub>gs (off)</sub>	I <sub>d</sub> = -1mA , V <sub>ds</sub> = - 10V	- 0.5		- 1.2	V
Drain-Source On-state Resistance ( note )	R <sub>ds ( on )</sub>	I <sub>d</sub> = - 2.5A , V <sub>gs</sub> = - 4.5V		0.062	0.075	Ω
		I <sub>d</sub> = - 2.5A , V <sub>gs</sub> = - 2.5V		0.095	0.115	Ω
Forward Transfer Admittance ( note )	Y <sub>fs</sub>	I <sub>d</sub> = - 2.5A , V <sub>ds</sub> = - 10V		7.5		S
Body Drain Diode Forward Voltage	V <sub>f</sub>	I <sub>f</sub> = - 4.5A , V <sub>gs</sub> = 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	C <sub>iss</sub>	V <sub>ds</sub> = - 10V , V <sub>gs</sub> = 0V f = 1 MHz		770		pF
Output Capacitance	C <sub>oss</sub>			440		pF
Feedback Capacitance	C <sub>rss</sub>			190		pF

### Switching Characteristics

Ta=25°C

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNITS	
Turn-on Delay Time	t <sub>d ( on )</sub>	V <sub>gs</sub> = - 5V , I <sub>d</sub> = - 2.5A V <sub>dd</sub> = - 10V		15		ns	
Rise Time	t <sub>r</sub>			20		ns	
Turn-off Delay Time	t <sub>d ( off )</sub>				55		ns
Fall Time	t <sub>f</sub>				30		ns

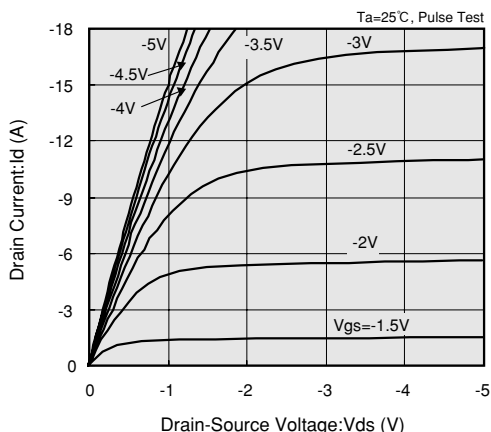
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### Thermal Characteristics

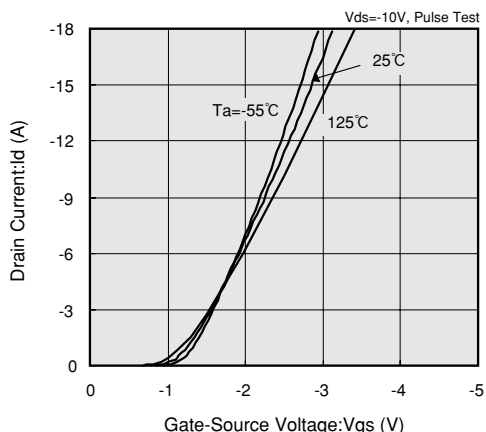
PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNITS
Thermal Resistance ( channel-ambience )	R <sub>th ( ch-a )</sub>	Implement on a glass epoxy resin PCB		62.5		°C / W

## Typical Performance Characteristics

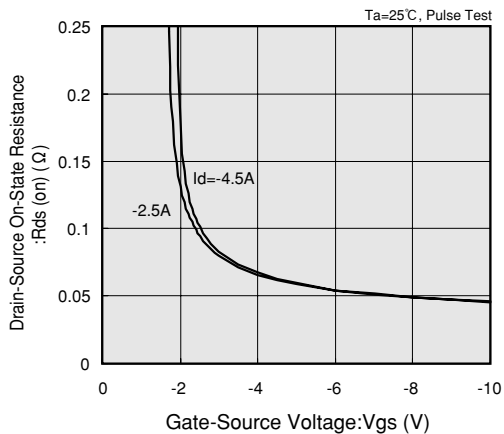
DRAIN CURRENT vs. DRAIN-SOURCE VOLTAGE



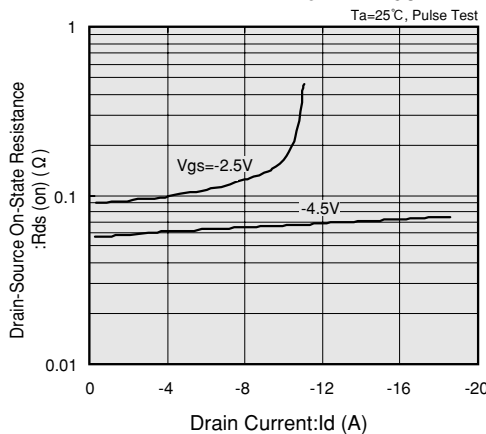
DRAIN CURRENT vs. GATE-SOURCE VOLTAGE



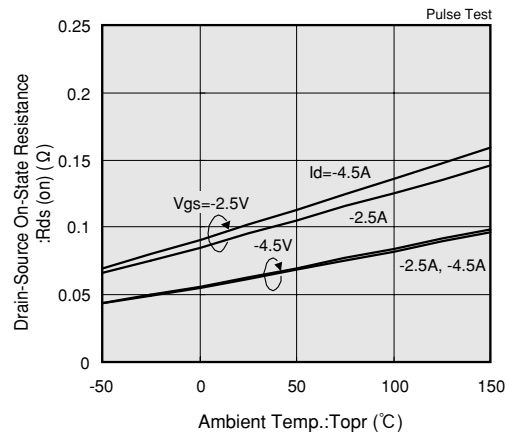
DRAIN-SOURCE ON-STATE RESISTANCE vs. GATE-SOURCE VOLTAGE



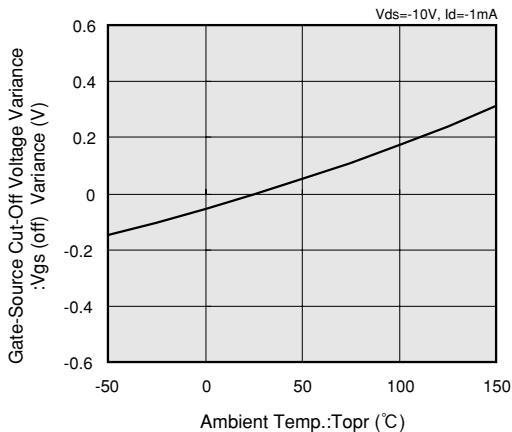
DRAIN-SOURCE ON-STATE RESISTANCE vs. DRAIN CURRENT



DRAIN-SOURCE ON-STATE RESISTANCE vs. AMBIENT TEMPERATURE

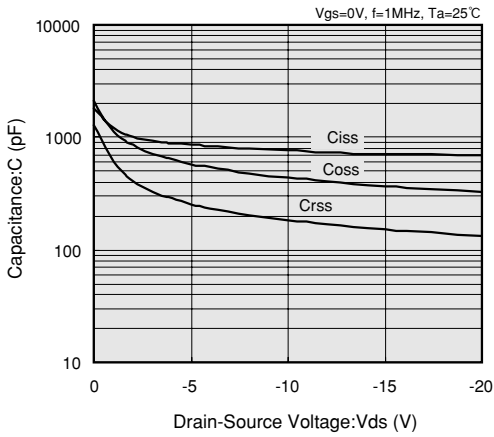


GATE-SOURCE CUT-OFF VOLTAGE VARIANCE vs. AMBIENT TEMPERATURE

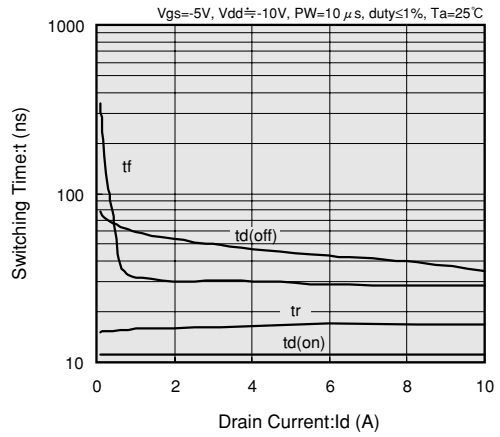


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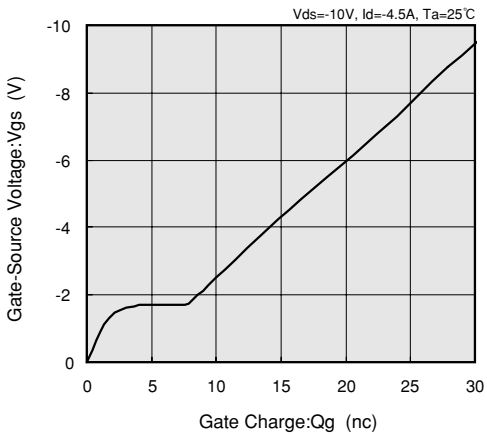
CAPACITANCE vs. DRAIN-SOURCE VOLTAGE



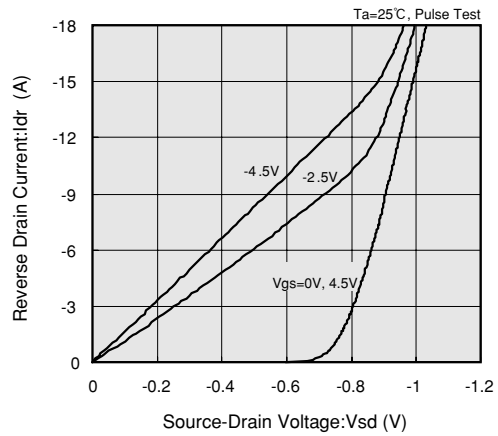
SWITCHING TIME vs. DRAIN CURRENT



GATE-SOURCE VOLTAGE vs. GATE CHARGE



REVERSE DRAIN CURRENT vs. SOURCE-DRAIN VOLTAGE



STANDARDIZED TRANSITION THERMAL RESISTANCE vs. PULSE WIDTH

