XP131A1520SR

TOREX

Power MOS FET

- ◆N-Channel Power MOS FET
- ◆DMOS Structure
- ◆Low On-State Resistance : 0.02Ω (max)
- ◆Ultra High-Speed Switching
- ◆SOP-8 Package

■General Description

The XP131A1520SR is an N-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.

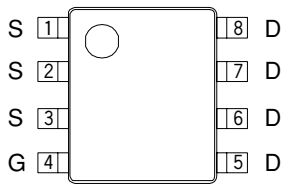
■Applications

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

■Features

Low on-state resistance : Rds (on) = 0.015Ω (Vgs = 10V)
: Rds (on) = 0.02Ω (Vgs = 4.5V)
Ultra high-speed switching
Operational Voltage : 4.5V
High density mounting : SOP-8

■Pin Configuration

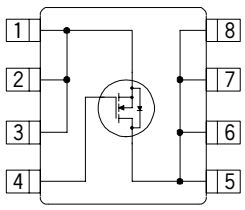


SOP-8
(TOP VIEW)

■Pin Assignment

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

■Equivalent Circuit



N-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	10	A
Drain Current (Pulse)	Idp	40	A
Reverse Drain Current	Idr	10	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°C

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			±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 = 5A , Vgs = 10V		0.012	0.015	Ω
		Id = 5A , Vgs = 4.5V		0.016	0.02	Ω
Forward Transfer Admittance (note)	| Yfs |	Id = 5A , Vds = 10V		20		S
Body Drain Diode Forward Voltage	Vf	If = 10A , Vgs = 0V		0.8	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		1370		pF
Output Capacitance	Coss			740		pF
Feedback Capacitance	Crss			280		pF

Switching Characteristics

Ta=25°C

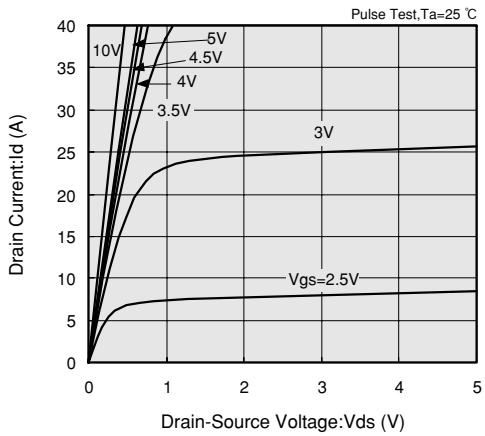
PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNITS
Turn-on Delay Time	td (on)	Vgs = 5V , Id = 5A Vdd = 10V		20		ns
Rise Time	tr			25		ns
Turn-off Delay Time	td (off)			40		ns
Fall Time	tf			20		ns

Thermal Characteristics

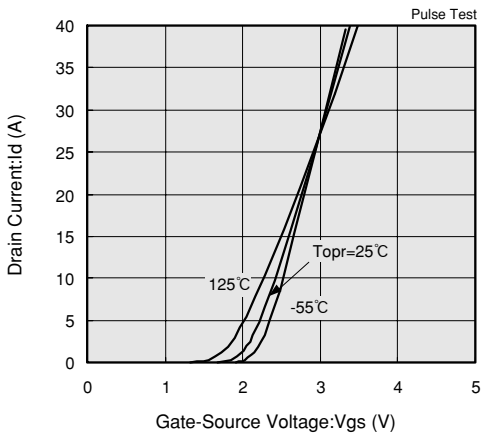
PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNITS
Thermal Resistance (channel-ambience)	Rth (ch-a)	Implement on a glass epoxy resin PCB		50		°C / W

■Typical Performance Characteristics

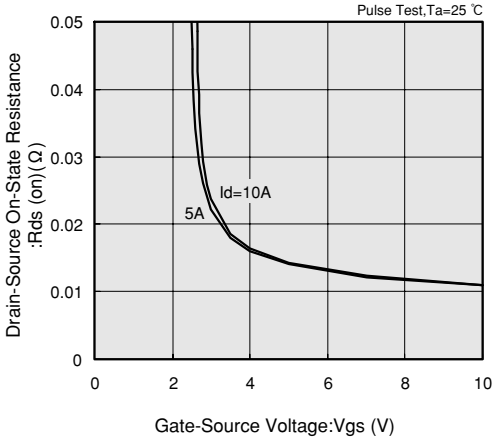
DRAIN CURRENT vs. DRAIN-SOURCE VOLTAGE



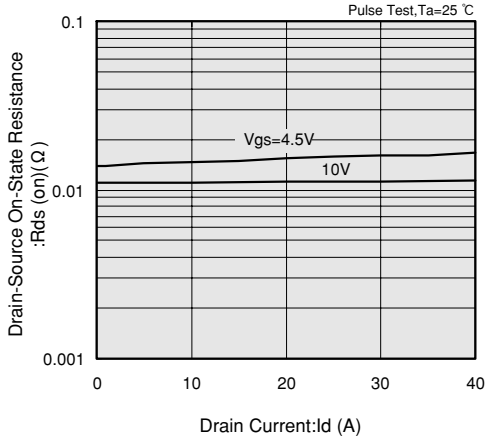
DRAIN CURRENT vs. GATE-SOURCE VOLTAGE



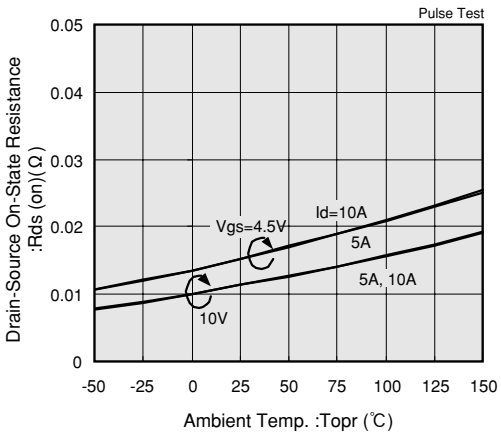
DRAIN-SOURCE ON-STATE RESISTANCE
vs. GATE-SOURCE VOLTAGE



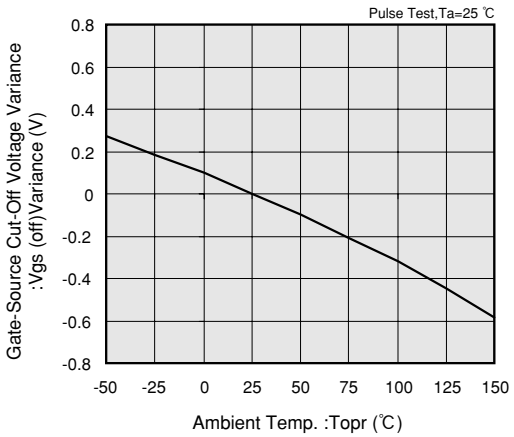
DRAIN-SOURCE ON-STATE RESISTANCE
vs. DRAIN CURRENT



DRAIN-SOURCE ON-STATE RESISTANCE
vs. AMBIENT TEMPERATURE



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



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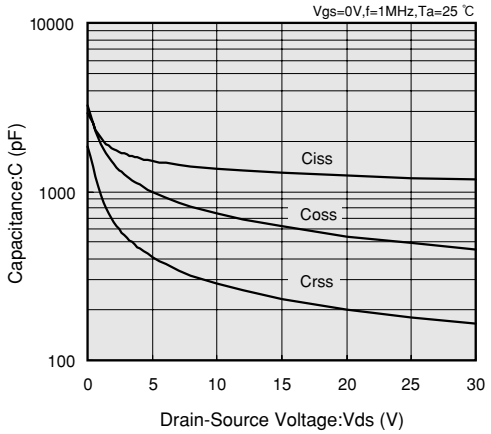
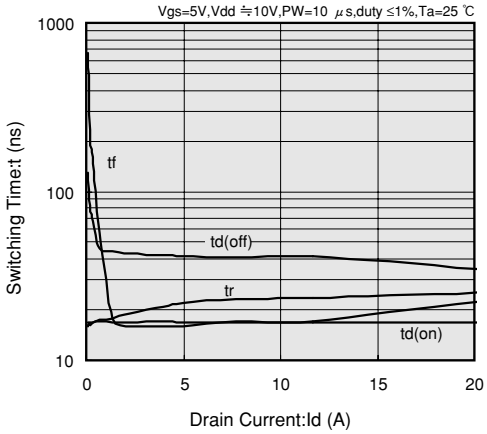
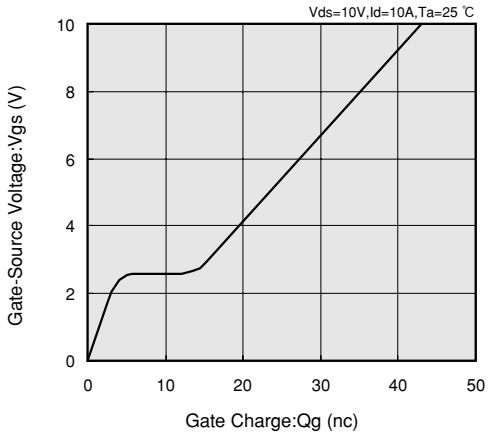
CAPACITANCE vs. DRAIN-SOURCE VOLTAGE



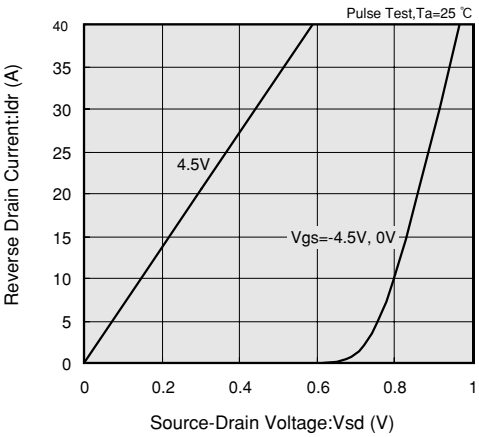
SWITCHING TIME vs. DRAIN CURRENT



GATE-SOURCE VOLTAGE vs. GATE CHARGE



REVERSE DRAIN CURRENT
vs. SOURCE-DRAIN VOLTAGE



STANDARDIZED TRANSITION THERMAL RESISTANCE vs. PULSE WIDTH