XP161A1355PR

TOREX

ETR1124_001

Power MOSFET

■GENERAL DESCRIPTION

The XP161A1355PR is an N-channel Power MOSFET 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.
A gate protect diode is built-in to prevent static damage.
The small SOT-89 package makes high density mounting possible.

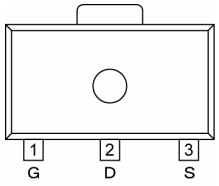
■APPLICATIONS

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

■FEATURES

Low On-State Resistance : Rds (on)= 0.05Ω@ Vgs = 4.5V
: Rds (on)= 0.07Ω@ Vgs = 2.5V
: Rds (on)= 0.15Ω@ Vgs = 1.5V
Ultra High-Speed Switching
Gate Protect Diode Built-in
Driving Voltage : 1.5V
N-Channel Power MOSFET
DMOS Structure
Small Package : SOT-89

■PIN CONFIGURATION

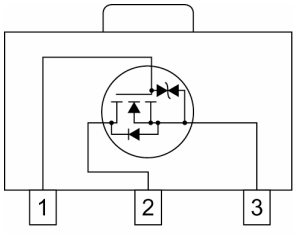


SOT-89
(TOP VIEW)

■PIN ASSIGNMENT

PIN NUMBER	PIN NAME	FUNCTION
1	G	Gate
2	D	Drain
3	S	Source

■EQUIVALENT CIRCUIT



N-channel MOSFET
(1 device built-in)

■ABSOLUTE MAXIMUM RATINGS

Ta = 25℃

PARAMETER	SYMBOL	RATINGS	UNITS
Drain-Source Voltage	Vdss	20	V
Gate-Source Voltage	Vgss	±8	V
Drain Current (DC)	Id	4	A
Drain Current (Pulse)	Idp	16	A
Reverse Drain Current	Idr	4	A
Channel Power Dissipation *	Pd	2	W
Channel Temperature	Tch	150	℃
Storage Temperature Range	Tstg	-55~150	℃

* When implemented on a ceramic PCB

■ELECTRICAL CHARACTERISTICS

DC Characteristics

Ta = 25℃

PARAMETER	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS
Drain Cut-Off Current	Idss	Vds=20V, Vgs= 0V	-	-	10	μA
Gate-Source Leak Current	Igss	Vgs= ±8V, Vds= 0V	-	-	±10	μA
Gate-Source Cut-Off Voltage	Vgs(off)	Id= 1mA, Vds= 10V	0.5	-	1.2	V
Drain-Source On-State Resistance *1	Rds(on)	Id= 2A, Vgs= 4.5V	-	0.037	0.050	Ω
		Id= 2A, Vgs= 2.5V	-	0.05	0.07	Ω
		Id= 0.5A, Vgs= 1.5V	-	0.1	0.15	Ω
Forward Transfer Admittance *1	| Yfs |	Id= 2A, Vds= 10V	-	10	-	S
Body Drain Diode Forward Voltage	Vf	If= 4A, Vgs= 0V	-	0.85	1.1	V

*1 Effective during pulse test.

Dynamic Characteristics

Ta = 25℃

PARAMETER	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS
Input Capacitance	Ciss	Vds= 10V, Vgs=0V f= 1MHz	-	390	-	pF
Output Capacitance	Coss		-	210	-	pF
Feedback Capacitance	Crss		-	90	-	pF

Switching Characteristics

Ta = 25℃

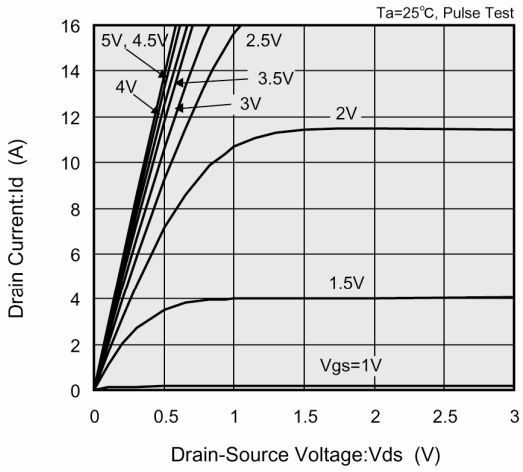
PARAMETER	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS
Turn-On Delay Time	td (on)	Vgs= 5V, Id=2A Vdd= 10V	-	10	-	ns
Rise Time	tr		-	15	-	ns
Turn-Off Delay Time	td (off)		-	85	-	ns
Fall Time	tf		-	45	-	ns

Thermal Characteristics

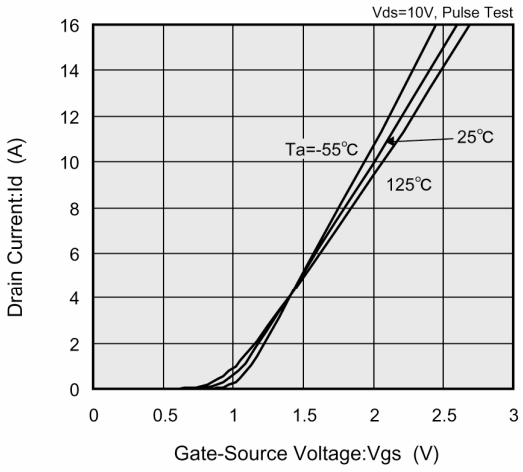
PARAMETER	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS
Thermal Resistance (Channel-Ambience)	Rth (ch-a)	Implement on a ceramic PCB	-	62.5	-	℃/W

■TYPICAL PERFORMANCE CHARACTERISTICS

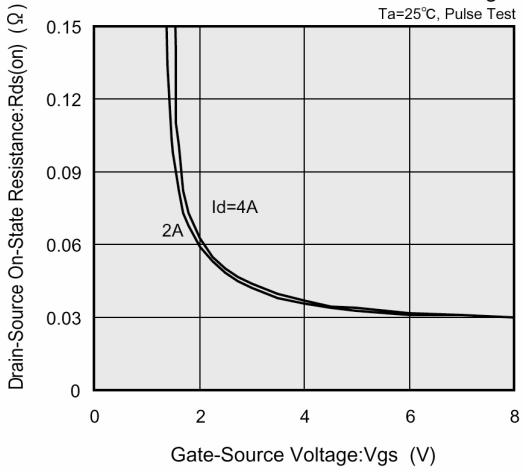
(1) Drain Current vs. Drain-Source Voltage



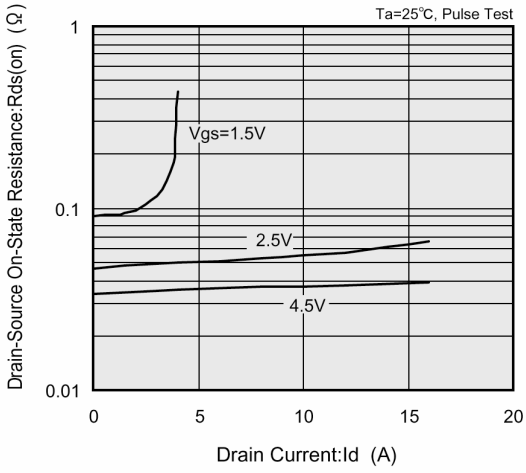
(2) Drain Current vs. Gate-Source Voltage



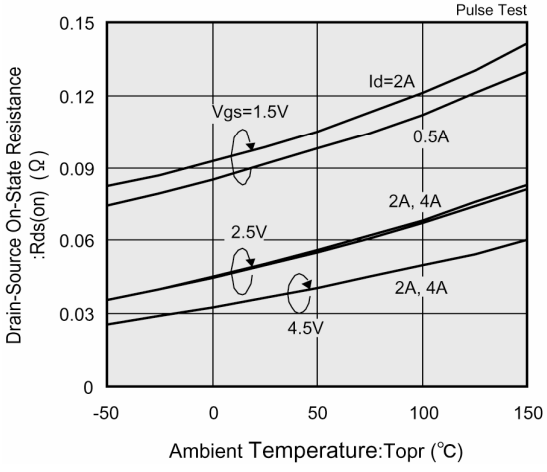
(3) Drain-Source On-State Resistance vs. Gate-Source Voltage



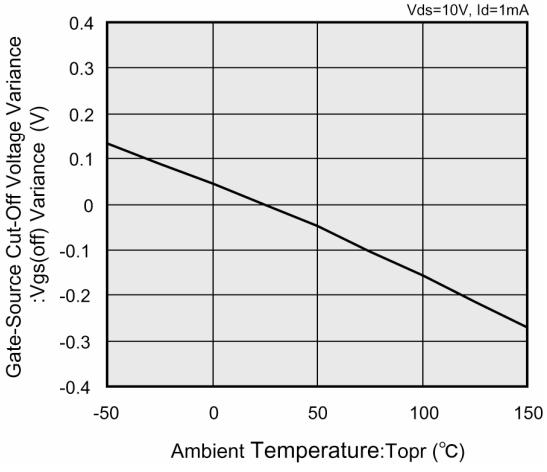
(4) Drain-Source On-State Resistance vs. Drain Current



(5) Drain-Source On-State Resistance vs. Ambient Temperature

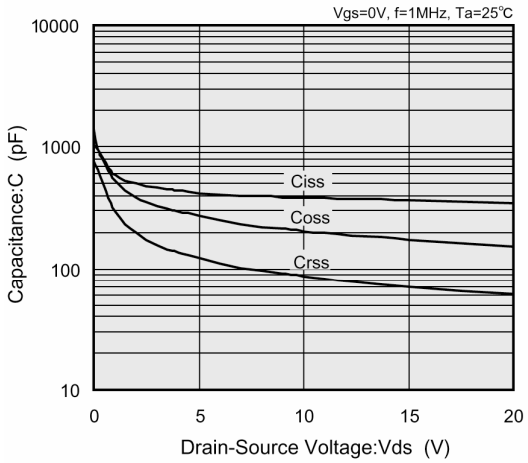


(6) Gate-Source Cut-Off Voltage Variance vs. Ambient Temperature

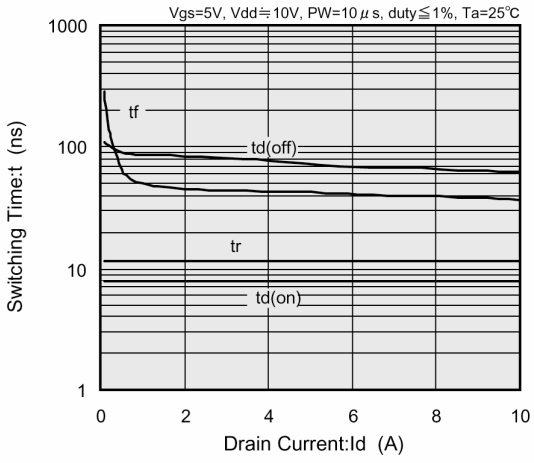


■TYPICAL PERFORMANCE CHARACTERISTICS (Continued)

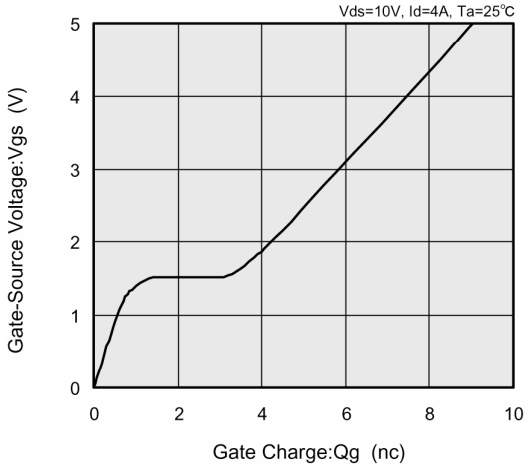
(7) Capacitance vs. Drain-Source Voltage



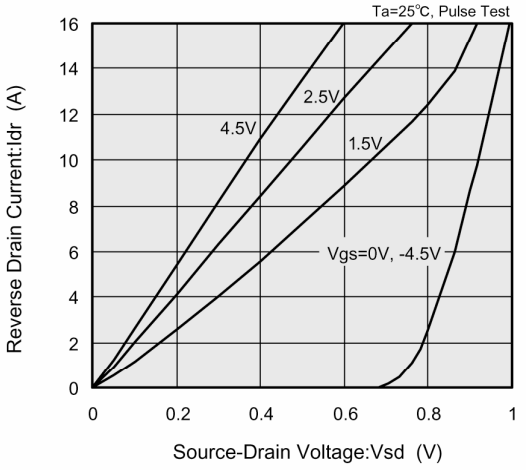
(8) Switching Time vs. Drain Current



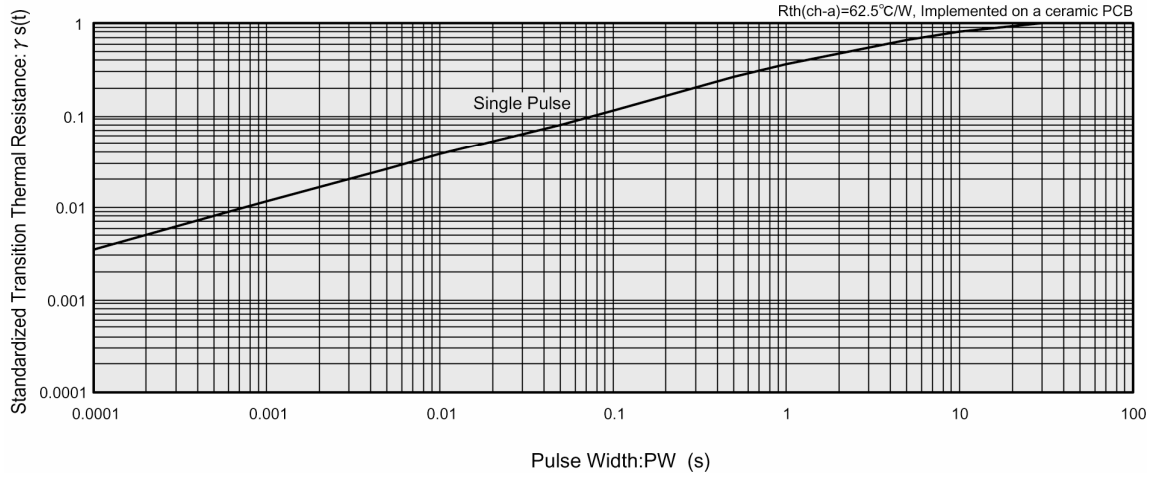
(9) Gate-Source Voltage vs. Gate Charge



(10) Reverse Drain Current vs. Source-Drain Voltage



(11) Standardized transition Thermal Resistance vs. Pulse Width



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