XP161A1355PR-G

ETR11024-004

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.

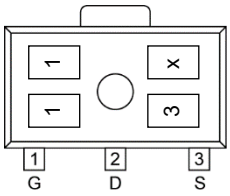
■APPLICATIONS

- ●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
Package : SOT-89

■PIN CONFIGURATION/ MARKING



SOT-89
(TOP VIEW)

G : Gate
S : Source
D : Drain

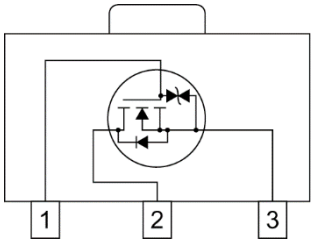
* x represents production lot number.

■PIN CONFIGURATION

PRODUCT	PACKAGE	ORDER UNIT
XP161A1355PR-G*	SOT-89	1,000pcs/Reel

(*) The “-G” suffix denotes Halogen and Antimony free as well as being fully RoHS compliant

■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 (900mm^2 x 0.8mm)

■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℃

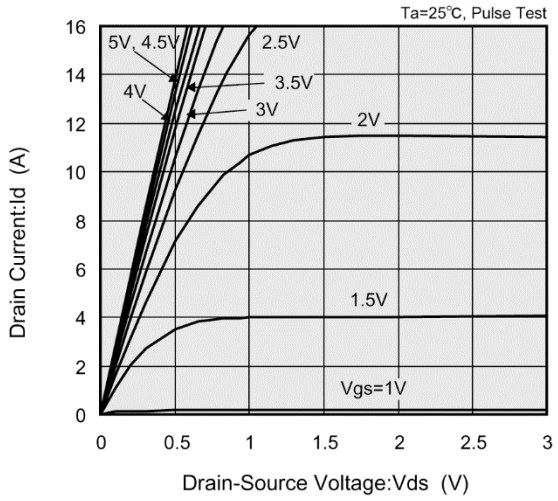
PARAMETER	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS
Turn-On Delay Time	td (on)	Vgs= 5V, Id=2A Vdd= 10V	-	10	-	ns
Rise Time	tr		-	15	-	ns
Turn-Off Delay Time	td (off)		-	85	-	ns
Fall Time	tf		-	45	-	ns

Thermal Characteristics

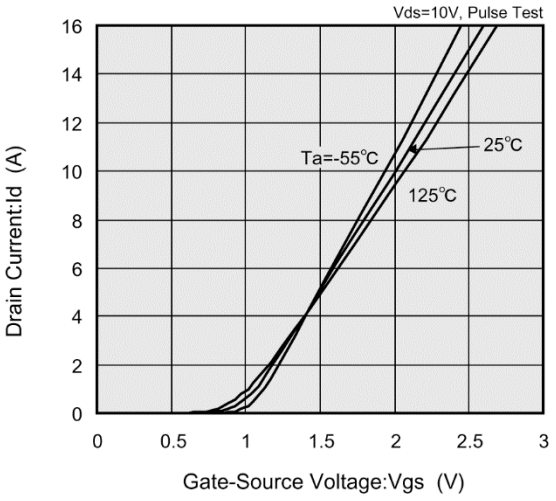
PARAMETER	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS
Thermal Resistance (Channel-Ambience)	Rth (ch-a)	Implement on a ceramic PCB	-	62.5	-	℃/W

■TYPICAL PERFORMANCE CHARACTERISTICS

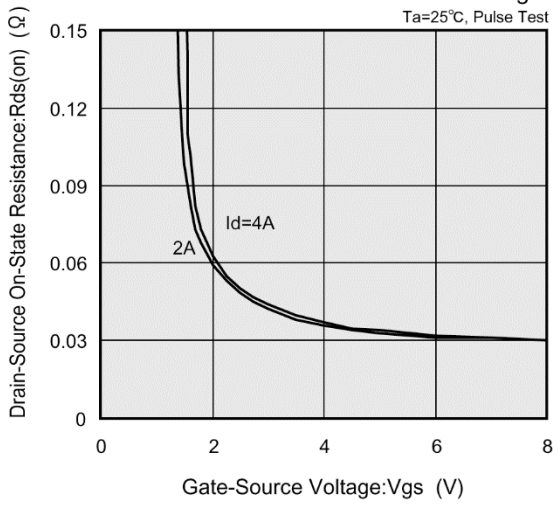
(1) Drain Current vs. Drain-Source Voltage



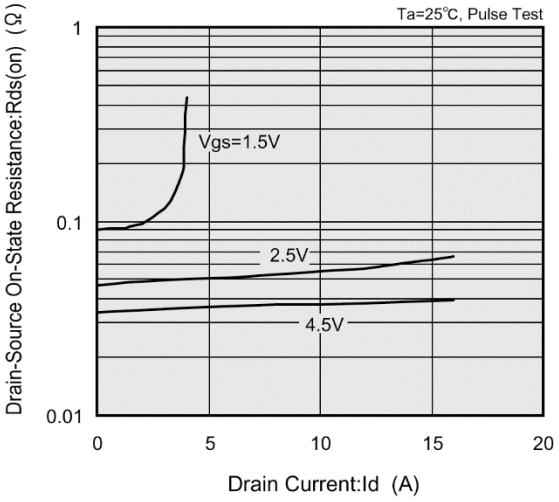
(2) Drain Current vs. Gate-Source Voltage



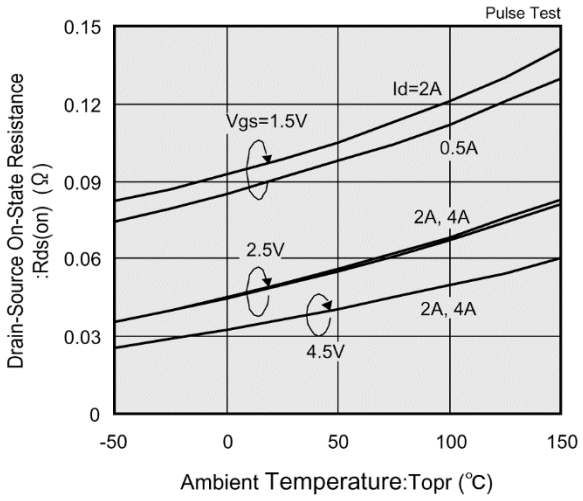
(3) Drain-Source On-State Resistance vs. Gate-Source Voltage



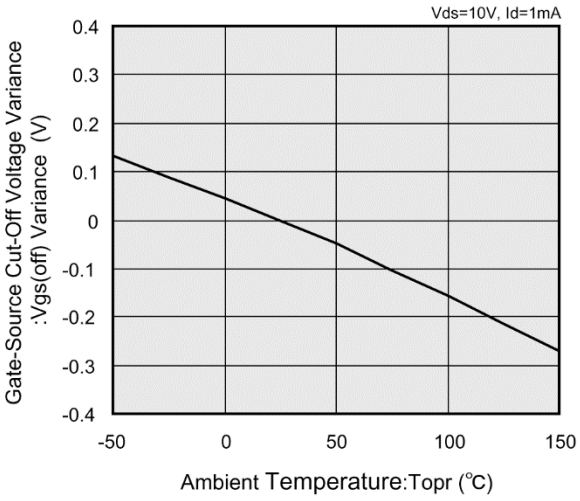
(4) Drain-Source On-State Resistance vs. Drain Current



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

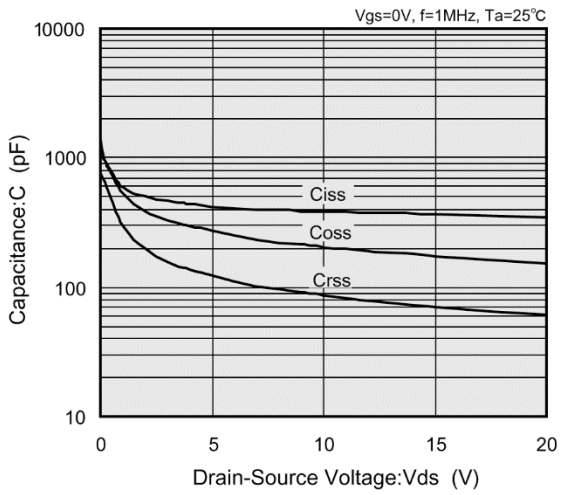


(6) Gate-Source Cut-Off Voltage Variance vs. Ambient Temperature

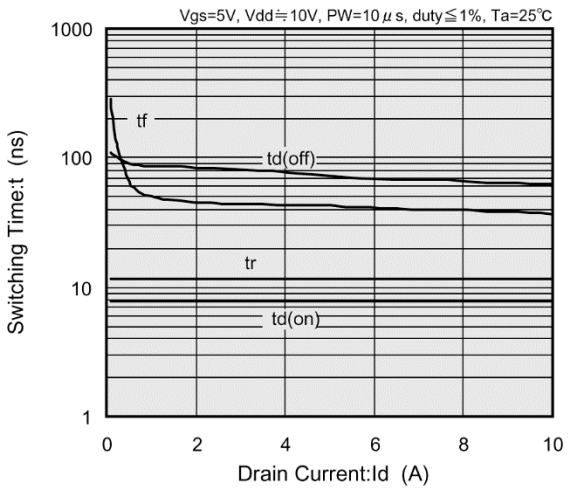


■TYPICAL PERFORMANCE CHARACTERISTICS (Continued)

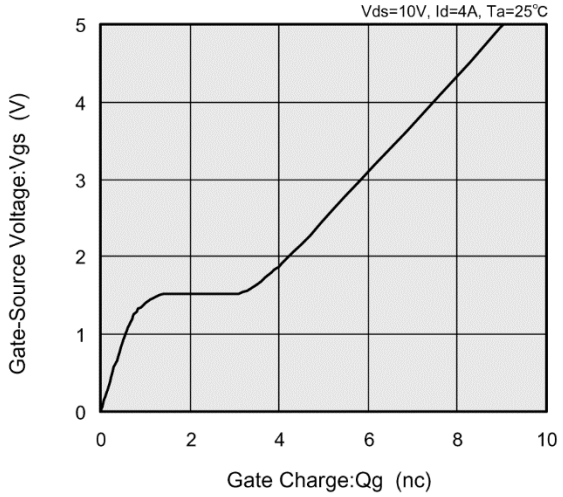
(7) Capacitance vs. Drain-Source Voltage



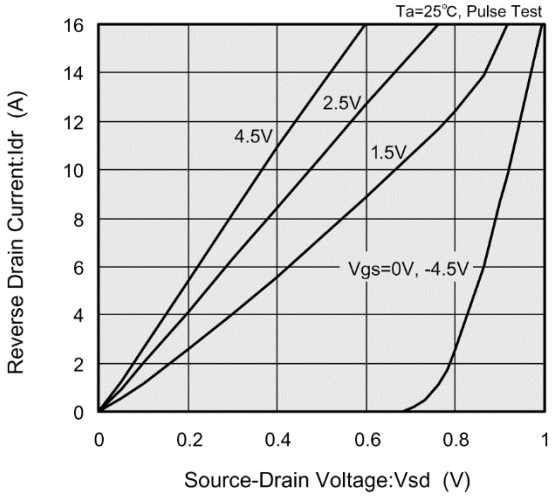
(8) Switching Time vs. Drain Current



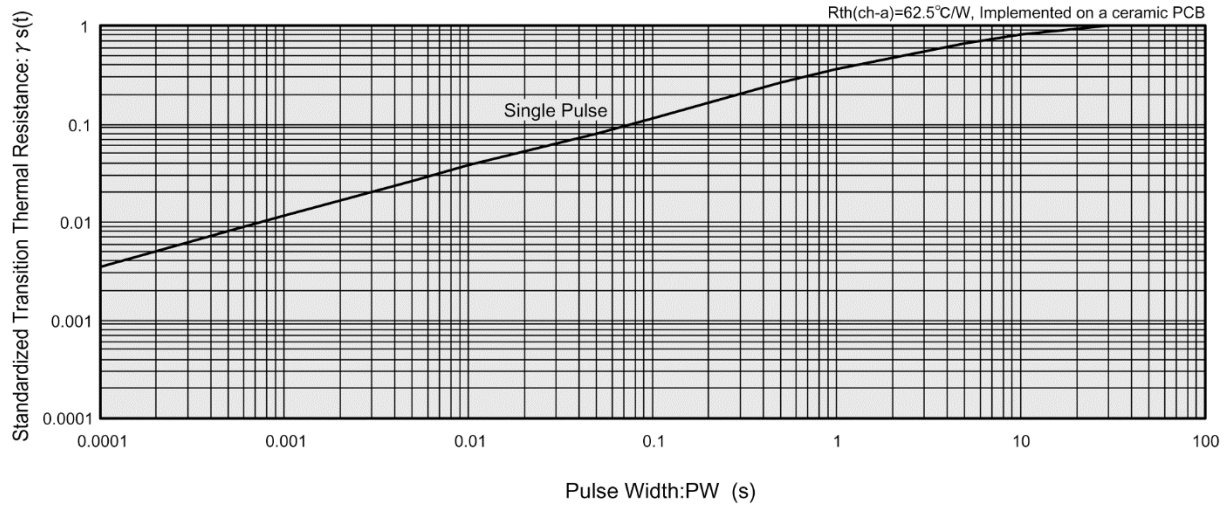
(9) Gate-Source Voltage vs. Gate Charge



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



(11) Standardized transition Thermal Resistance vs. Pulse Width



■PACKAGING INFORMATION

For the latest package information go to, www.torexsemi.com/technical-support/packages

PACKAGE	OUTLINE / LAND PATTERN	THERMAL CHARACTERISTICS
SOT-89	SOT-89 PKG	SOT-89 Power Dissipation

1. The product and product specifications contained herein are subject to change without notice to improve performance characteristics. Consult us, or our representatives before use, to confirm that the information in this datasheet is up to date.

2. The information in this datasheet is intended to illustrate the operation and characteristics of our products. We neither make warranties or representations with respect to the accuracy or completeness of the information contained in this datasheet nor grant any license to any intellectual property rights of ours or any third party concerning with the information in this datasheet.

3. Applicable export control laws and regulations should be complied and the procedures required by such laws and regulations should also be followed, when the product or any information contained in this datasheet is exported.

4. The product is neither intended nor warranted for use in equipment of systems which require extremely high levels of quality and/or reliability and/or a malfunction or failure which may cause loss of human life, bodily injury, serious property damage including but not limited to devices or equipment used in 1) nuclear facilities, 2) aerospace industry, 3) medical facilities, 4) automobile industry and other transportation industry and 5) safety devices and safety equipment to control combustions and explosions. Do not use the product for the above use unless agreed by us in writing in advance.

5. Although we make continuous efforts to improve the quality and reliability of our products; nevertheless Semiconductors are likely to fail with a certain probability. So in order to prevent personal injury and/or property damage resulting from such failure, customers are required to incorporate adequate safety measures in their designs, such as system fail safes, redundancy and fire prevention features.

6. Our products are not designed to be Radiation-resistant.

7. Please use the product listed in this datasheet within the specified ranges.

8. We assume no responsibility for damage or loss due to abnormal use.

9.

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