XP135A1145SR is Discontinued.

XP135A1145SR

TOREX

ETR1116_001a

Power MOSFET

■GENERAL DESCRIPTION

The XP135A1145SR is an N-channel/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.

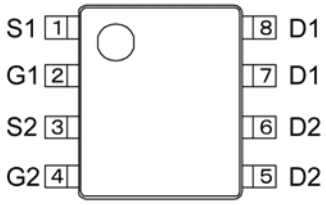
■APPLICATIONS

- Notebook PCs
- Cellular and portable phones
- On-board power supplies

■FEATURES

Low On-State Resistance (Nch) : Rds (on) = 0.033Ω@ Vgs = 10V
: Rds (on) = 0.045Ω@ Vgs = 4.5V
Low On-State Resistance (Pch) : Rds (on) = 0.065Ω@ Vgs = -10V
: Rds (on) = 0.110Ω@ Vgs = -4.5V
Ultra High-Speed Switching
Driving Voltage : 4.5V (Nch) : -4.5V (Pch)
N-Channel/P-channel Power MOSFET
DMOS Structure
Two FET Devices Built-in
Package : SOP-8

■PIN CONFIGURATION

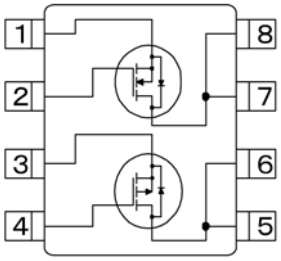


SOP-8
(TOP VIEW)

■PIN ASSIGNMENT

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

■EQUIVALENT CIRCUIT



N-channel/P-channel MOSFET
(2 devices built-in)

■ABSOLUTE MAXIMUM RATINGS

Ta = 25℃

PARAMETER	SYMBOL	RATINGS		UNITS
		Nch	Pch	
Drain-Source Voltage	Vdss	30	-30	V
Gate-Source Voltage	Vgss	±20	±20	V
Drain Current (DC)	Id	6	-4	A
Drain Current (Pulse)	Idp	20	-16	A
Reverse Drain Current	Idr	6	-4	A
Channel Power Dissipation *	Pd	2		W
Channel Temperature	Tch	150		℃
Storage Temperature Range	Tstg	-55~150		℃

* When implemented on a glass epoxy PCB

■ELECTRICAL CHARACTERISTICS

DC Characteristics (N-channel Power MOSFET)

Ta = 25℃

PARAMETER	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS
Drain Cut-Off Current	Idss	Vds= 30V, Vgs= 0V	-	-	10	μA
Gate-Source Leak 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 *1	Rds(on)	Id= 3A, Vgs= 10V	-	0.026	0.033	Ω
		Id= 3A, Vgs= 4.5V	-	0.035	0.045	Ω
Forward Transfer Admittance *1	| Yfs |	Id= 3A, Vds= 10V	-	12	-	S
Body Drain Diode Forward Voltage	Vf	If= 6A, 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	-	620	-	pF
Output Capacitance	Coss		-	350	-	pF
Feedback Capacitance	Crss		-	120	-	pF

Switching Characteristics

Ta = 25℃

PARAMETER	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS
Turn-On Delay Time	td (on)	Vgs= 5V, Id= 3A Vdd= 10V	-	15	-	ns
Rise Time	tr		-	20	-	ns
Turn-Off Delay Time	td (off)		-	30	-	ns
Fall Time	tf		-	10	-	ns

Thermal Characteristics

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

■ELECTRICAL CHARACTERISTICS (Continued)

DC Characteristics (P-channel Power MOSFET)

Ta = 25℃

PARAMETER	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS
Drain Cut-Off Current	Idss	Vds= -30V, Vgs= 0V	-	-	-10	μA
Gate-Source Leak 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 *1	Rds(on)	Id= -2A, Vgs= -10V	-	0.055	0.065	Ω
		Id= -2A, Vgs= -4.5V	-	0.09	0.11	Ω
Forward Transfer Admittance *1	| Yfs |	Id= -2A, Vds= -10V	-	5	-	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	-	680	-	pF
Output Capacitance	Coss		-	450	-	pF
Feedback Capacitance	Crss		-	170	-	pF

Switching Characteristics

Ta = 25℃

PARAMETER	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS
Turn-On Delay Time	td (on)	Vgs= -5V, Id= -2A Vdd= -10V	-	15	-	ns
Rise Time	tr		-	20	-	ns
Turn-Off Delay Time	td (off)		-	30	-	ns
Fall Time	tf		-	20	-	ns

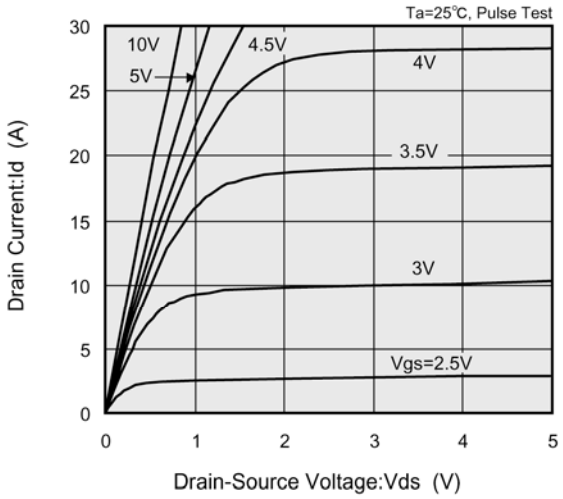
Thermal Characteristics

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

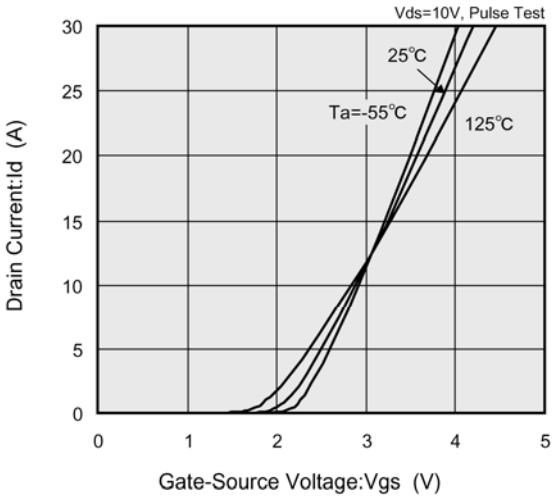
■TYPICAL PERFORMANCE CHARACTERISTICS

●N-channel Power MOSFET

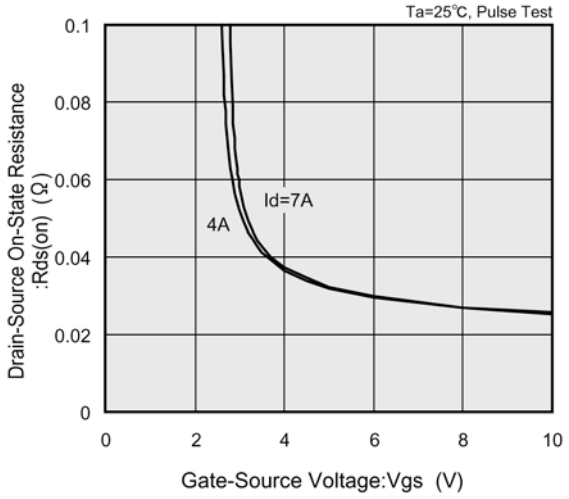
(1) Drain Current vs. Drain-Source Voltage



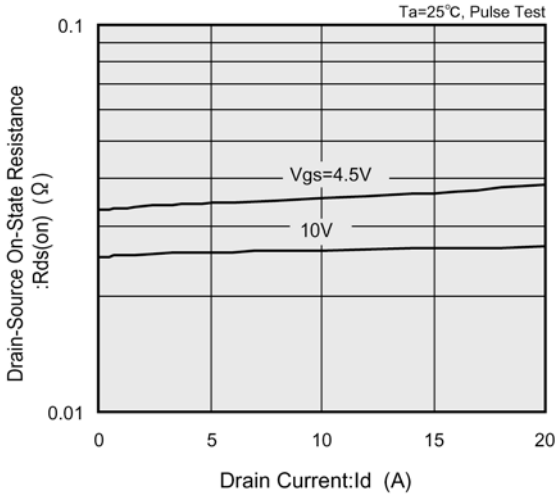
(2) Drain Current vs. Gate-Source Voltage



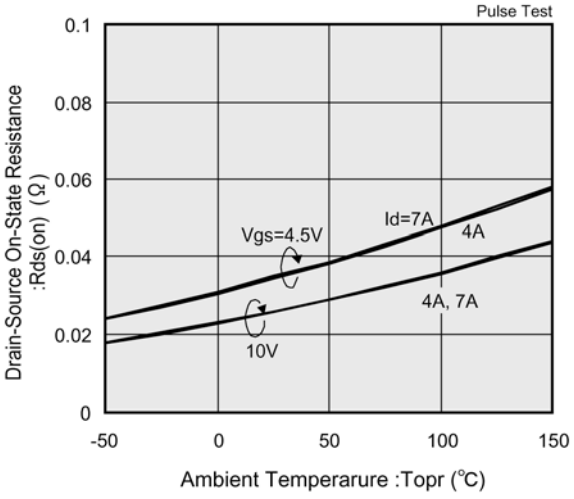
(3) Drain-Source On-State Resistance vs. Gate-Source Voltage



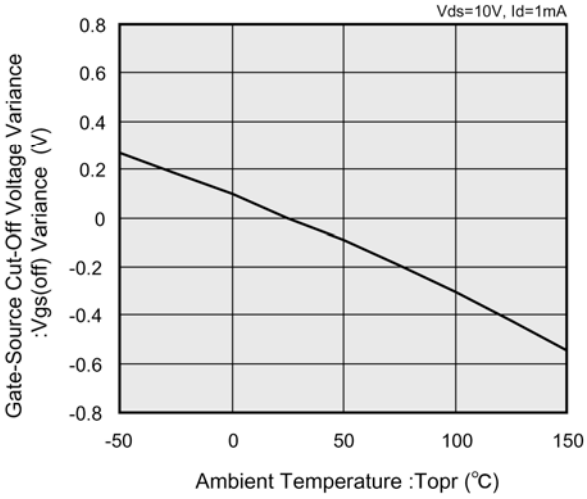
(4) Drain-Source On-State Resistance vs. Drain Current



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



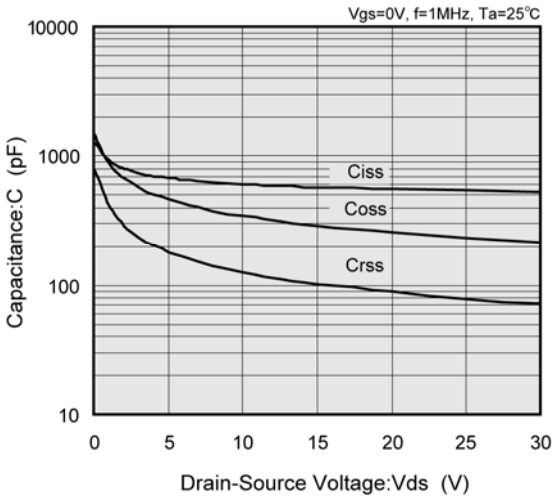
(6) Gate-Ssource Cut-Off Voltage Variance vs. Ambient Temperature



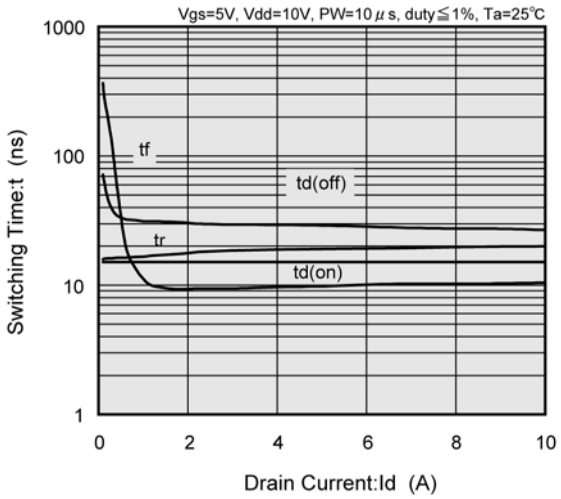
■TYPICAL PERFORMANCE CHARACTERISTICS (Continued)

●N-channel Power MOSFET(Continued)

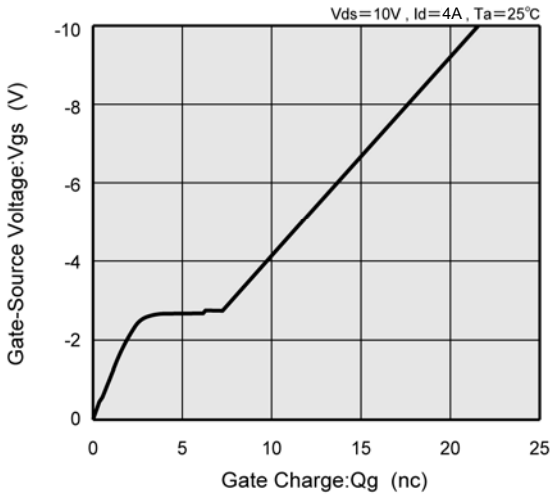
(7) Capacitance vs. Drain-Source Voltage



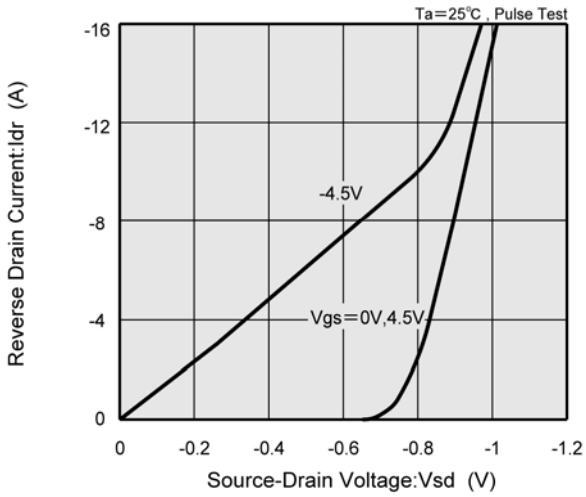
(8) Switching Time vs. Drain Current



(9) Gate-Source Voltage vs. Gate Charge



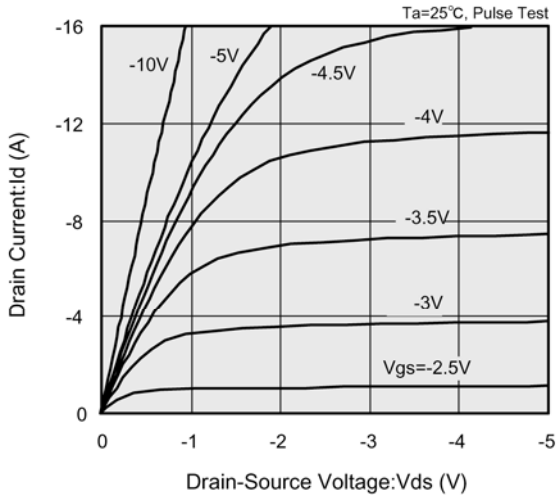
(10) Reverse Drain Current vs. Source-Drain Voltage



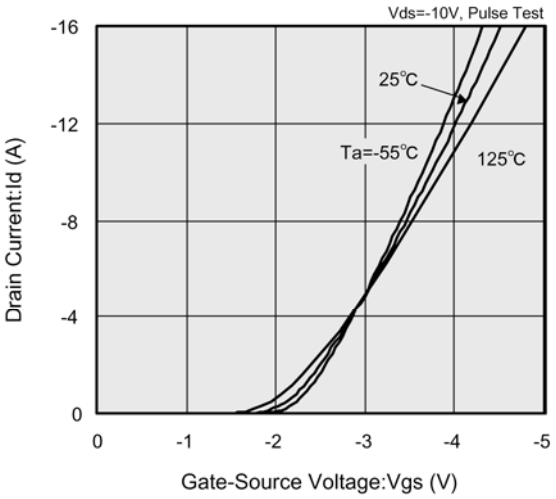
■TYPICAL PERFORMANCE CHARACTERISTICS (Continued)

●P-channel Power MOSFET

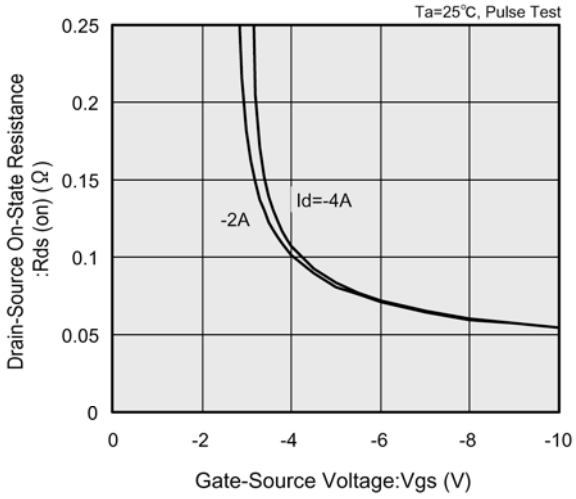
(1) Drain Current vs. Drain-Source Voltage



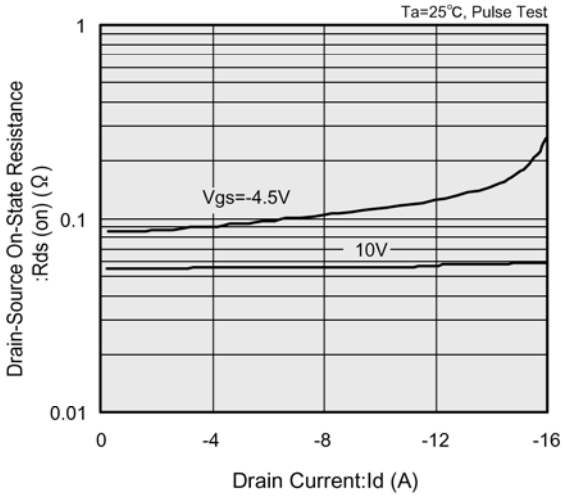
(2) Drain Current vs. Gate-Source Voltage



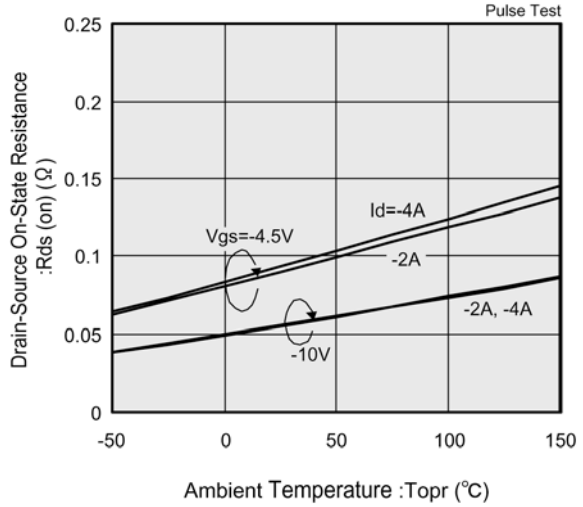
(3) Drain-Source On-State Resistance vs. Gate-Source Voltage



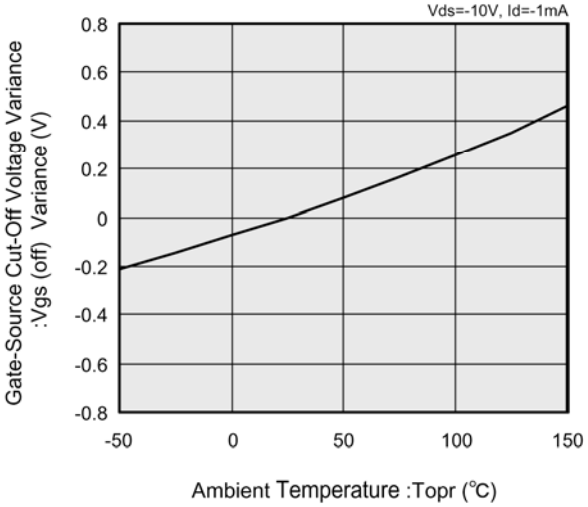
(4) Drain-Source On-State Resistance vs. Drain Current



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



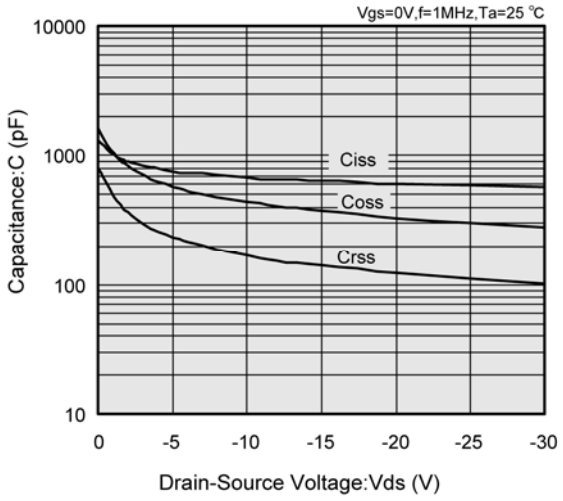
(6) Gate-Source Cut-Off Voltage Variance vs. Ambient Temperature



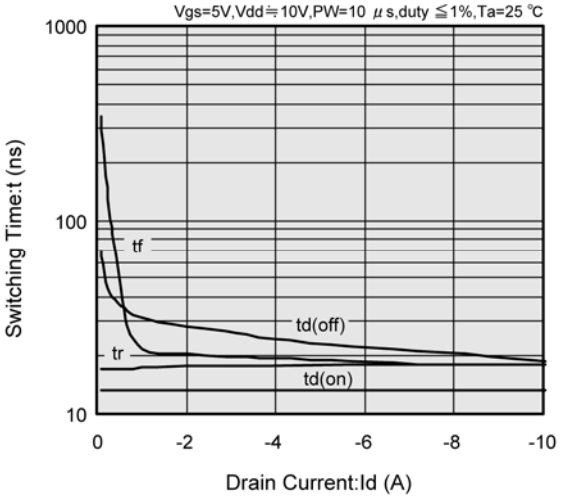
■TYPICAL PERFORMANCE CHARACTERISTICS (Continued)

●P-channel Power MOSFET(Continued)

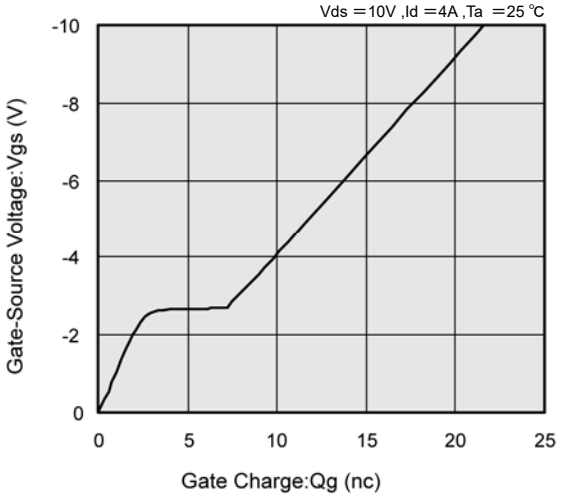
(7) Capacitance vs. Drain-Source Voltage



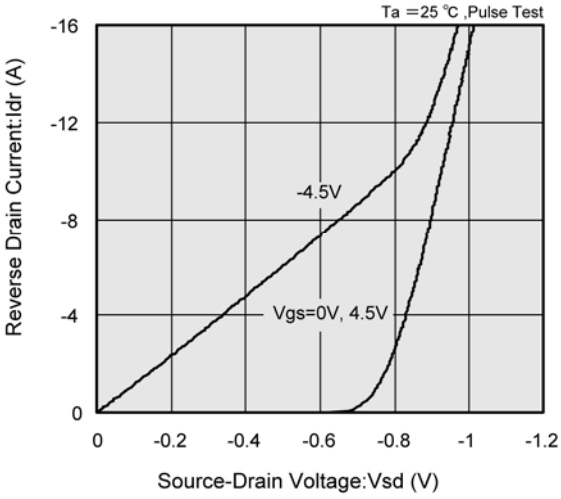
(8) Switching Time vs. Drain Current



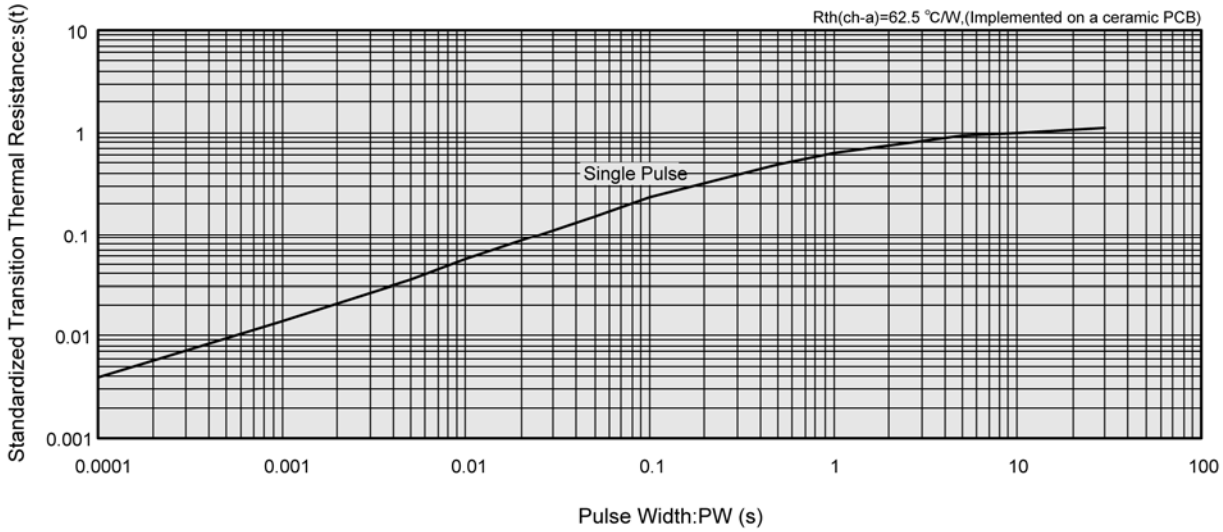
(9) Gate-Source Voltage vs. Gate Charge



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



(11) Standardized Transition Thermal Resistance vs. Pulse Width



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