To our customers,

Old Company Name in Catalogs and Other Documents

On April 1st, 2010, NEC Electronics Corporation merged with Renesas Technology Corporation, and Renesas Electronics Corporation took over all the business of both companies. Therefore, although the old company name remains in this document, it is a valid Renesas Electronics document. We appreciate your understanding.

Renesas Electronics website: http://www.renesas.com

April 1st, 2010
Renesas Electronics Corporation

Issued by: Renesas Electronics Corporation (http://www.renesas.com)

Send any inquiries to http://www.renesas.com/inquiry.

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(Note 1) "Renesas Electronics" as used in this document means Renesas Electronics Corporation and also includes its majority-owned subsidiaries.

(Note 2) "Renesas Electronics product(s)" means any product developed or manufactured by or for Renesas Electronics.

To all our customers

Regarding the change of names mentioned in the document, such as Mitsubishi Electric and Mitsubishi XX, to Renesas Technology Corp.

The semiconductor operations of Hitachi and Mitsubishi Electric were transferred to Renesas Technology Corporation on April 1st 2003. These operations include microcomputer, logic, analog and discrete devices, and memory chips other than DRAMs (flash memory, SRAMs etc.) Accordingly, although Mitsubishi Electric, Mitsubishi Electric Corporation, Mitsubishi Semiconductors, and other Mitsubishi brand names are mentioned in the document, these names have in fact all been changed to Renesas Technology Corp. Thank you for your understanding. Except for our corporate trademark, logo and corporate statement, no changes whatsoever have been made to the contents of the document, and these changes do not constitute any alteration to the contents of the document itself.

Note : Mitsubishi Electric will continue the business operations of high frequency & optical devices and power devices.

Renesas Technology Corp.
Customer Support Dept.
April 1, 2003

MITSUBISHI POWER MOSFET

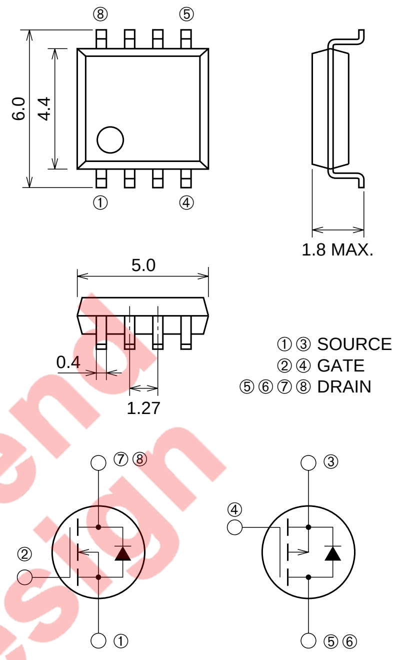
FY4AEJ-03

HIGH-SPEED SWITCHING USE
Nch/Pch POWER MOSFET

FY4AEJ-03

- 4V DRIVE
- V_{DSS} .... ±30V
- r_{DS} (ON) (MAX) 30/80mΩ
- I_D .... ±4A

OUTLINE DRAWING Dimensions in mm



SOP-8

APPLICATION

Motor control, Lamp control, Solenoid control,
DC-DC converter, Li-ionbattery, notebook p/c, etc

MAXIMUM RATINGS (T_c = 25°C)

Symbol	Parameter	Conditions	Ratings		Unit
			n-ch	p-ch	
V_{DSS}	Drain-source voltage	V_{GS} = 0V	30	–30	V
V_{GSS}	Gate-source voltage	V_{DS} = 0V	±20	±20	V
I_D	Drain current		4	–4	A
I_{DM}	Drain current (Pulsed)		28	–28	A
I_{DA}	Avalanche current (Pulsed)	L = 10µH	4	–4	A
I_S	Source current		1.7	–1.7	A
I_{SM}	Source current (Pulsed)		6.8	–6.8	A
P_D	Maximum power dissipation		1.6	1.6	W
T_{ch}	Channel temperature		–55~+150		°C
T_{stg}	Storage temperature		–55~+150		°C
—	Weight	Typical value	0.07		g

Aug. 1999

RENESAS
Renesas Technology Corp.

ELECTRICAL CHARACTERISTICS (Tch = 25°C)

N-ch

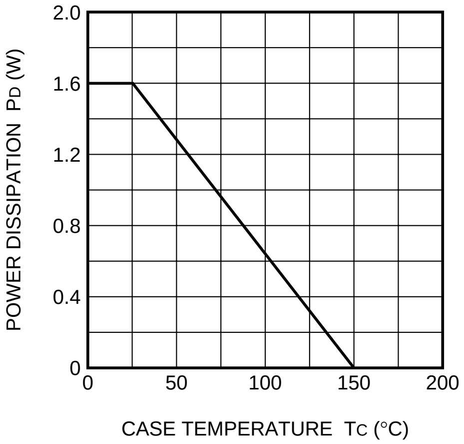
Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
$V_{(BR)DSS}$	Drain-source breakdown voltage	I_D = 1mA, V_{GS} = 0V	30	—	—	V
I_{GSS}	Gate-source leakage current	V_{GS} = ±20V, V_{DS} = 0V	—	—	±0.1	µA
I_{DSS}	Drain-source leakage current	V_{DS} = 30V, V_{GS} = 0V	—	—	0.1	mA
$V_{GS(th)}$	Gate-source threshold voltage	I_D = 1mA, V_{DS} = 10V	1.0	1.5	2.0	V
$r_{DS(ON)}$	Drain-source on-state resistance	I_D = 4A, V_{GS} = 10V	—	23	30	mΩ
$r_{DS(ON)}$	Drain-source on-state resistance	I_D = 2A, V_{GS} = 4V	—	40	55	mΩ
$\lvert y_{fs} \rvert$	Forward transfer admittance	I_D = 4A, V_{DS} = 10V	—	8	—	S
C_{iss}	Input capacitance	V_{DS} = 10V, V_{GS} = 0V, f = 1MHz	—	550	—	pF
C_{oss}	Output capacitance		—	220	—	pF
C_{rss}	Reverse transfer capacitance		—	115	—	pF
$t_{d(on)}$	Turn-on delay time	V_{DD} = 15V, I_D = 2A, V_{GS} = 10V, R_{GEN} = R_{GS} = 50Ω	—	12	—	ns
t_r	Rise time		—	20	—	ns
$t_{d(off)}$	Turn-off delay time		—	40	—	ns
t_f	Fall time		—	40	—	ns
V_{SD}	Source-drain voltage	I_S = 1.7A, V_{GS} = 0V	—	0.75	1.10	V
$R_{th(ch-a)}$	Thermal resistance	Channel to ambiet	—	—	78.1	°C/W
t_{rr}	Reverse recovery time	I_S = 1.7A, di_s/dt = –50A/µs	—	100	—	ns

P-ch

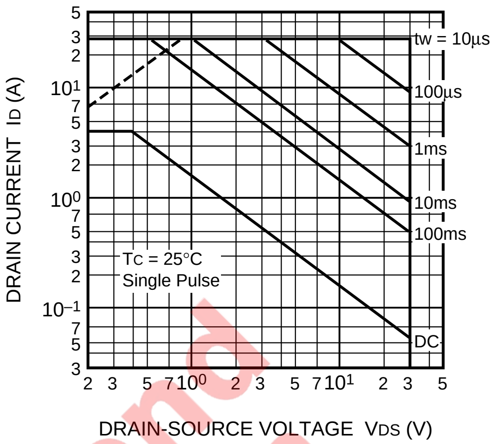
Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
$V_{(BR)DSS}$	Drain-source breakdown voltage	I_D = 1mA, V_{GS} = 0V	–30	—	—	V
I_{GSS}	Gate-source leakage current	V_{GS} = ±20V, V_{DS} = 0V	—	—	±0.1	µA
I_{DSS}	Drain-source leakage current	V_{DS} = –30V, V_{GS} = 0V	—	—	–0.1	mA
$V_{GS(th)}$	Gate-source threshold voltage	I_D = –1mA, V_{DS} = –10V	–1.5	–2.0	–2.5	V
$r_{DS(ON)}$	Drain-source on-state resistance	I_D = –4A, V_{GS} = –10V	—	60	80	mΩ
$r_{DS(ON)}$	Drain-source on-state resistance	I_D = –2A, V_{GS} = –4V	—	115	180	mΩ
$\lvert y_{fs} \rvert$	Forward transfer admittance	I_D = –4A, V_{DS} = –10V	—	6	—	S
C_{iss}	Input capacitance	V_{DS} = –10V, V_{GS} = 0V, f = 1MHz	—	680	—	pF
C_{oss}	Output capacitance		—	180	—	pF
C_{rss}	Reverse transfer capacitance		—	90	—	pF
$t_{d(on)}$	Turn-on delay time	V_{DD} = –15V, I_D = –2A, V_{GS} = –10V, R_{GEN} = R_{GS} = 50Ω	—	10	—	ns
t_r	Rise time		—	15	—	ns
$t_{d(off)}$	Turn-off delay time		—	50	—	ns
t_f	Fall time		—	30	—	ns
V_{SD}	Source-drain voltage	I_S = –1.7A, V_{GS} = 0V	—	–0.88	–1.20	V
$R_{th(ch-a)}$	Thermal resistance	Channel to ambiet	—	—	78.1	°C/W
t_{rr}	Reverse recovery time	I_S = –1.7A, di_s/dt = 50A/µs	—	70	—	ns

PERFORMANCE CURVES (N-ch)

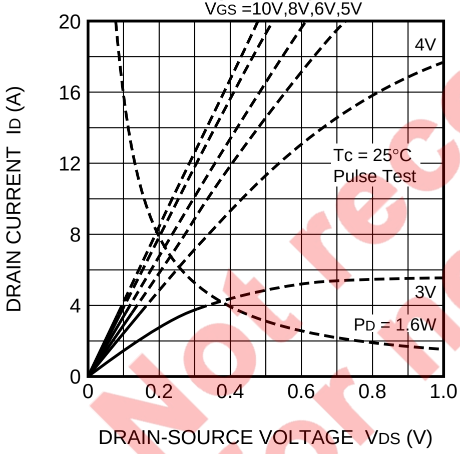
POWER DISSIPATION DERATING CURVE



MAXIMUM SAFE OPERATING AREA



OUTPUT CHARACTERISTICS (TYPICAL)



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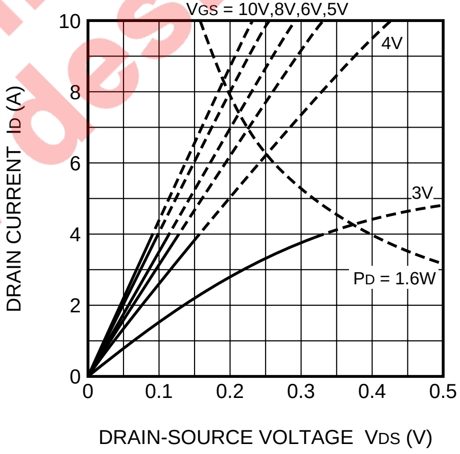
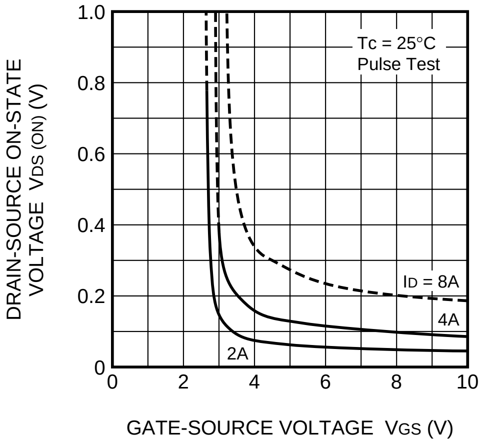
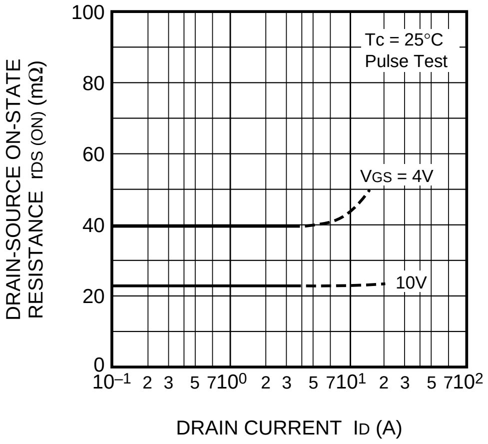
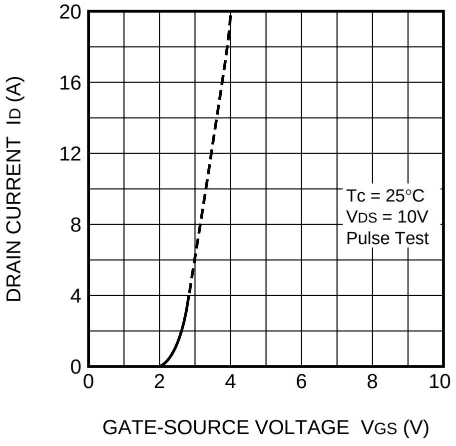


ON-STATE VOLTAGE VS. GATE-SOURCE VOLTAGE (TYPICAL)

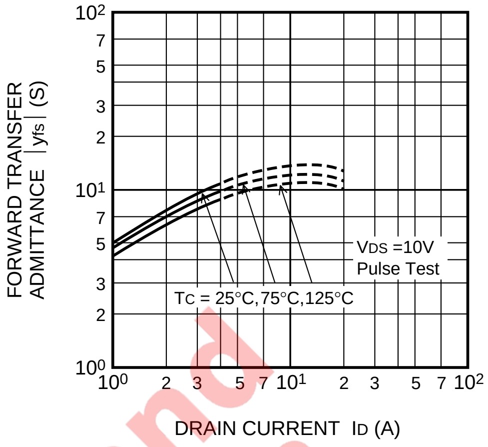


ON-STATE RESISTANCE VS. DRAIN CURRENT (TYPICAL)

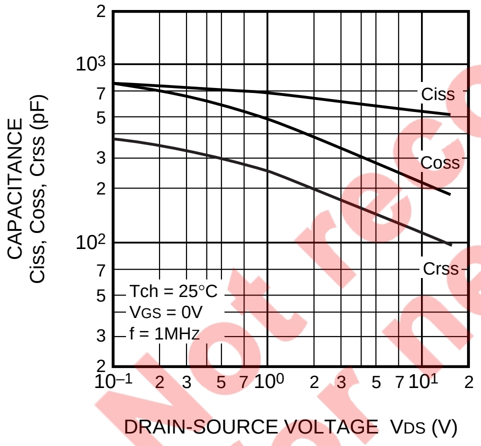




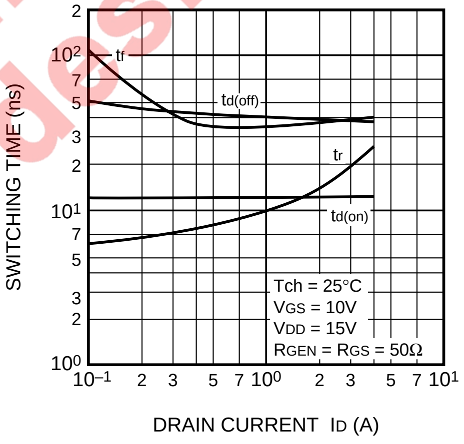
TRANSFER CHARACTERISTICS
(TYPICAL)



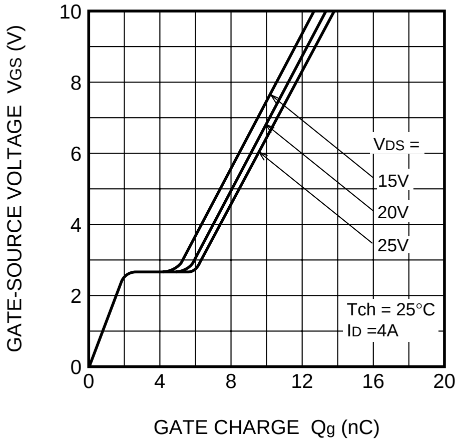
FORWARD TRANSFER ADMITTANCE
VS.DRAIN CURRENT
(TYPICAL)



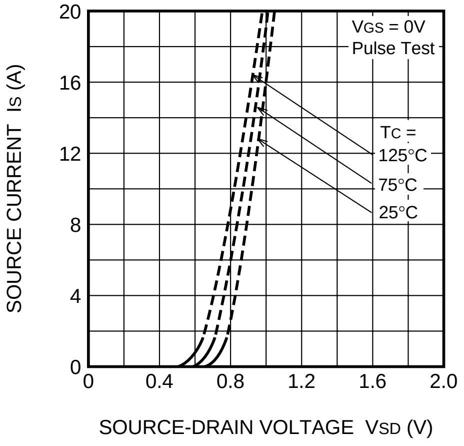
CAPACITANCE VS.
DRAIN-SOURCE VOLTAGE
(TYPICAL)



SWITCHING CHARACTERISTICS
(TYPICAL)

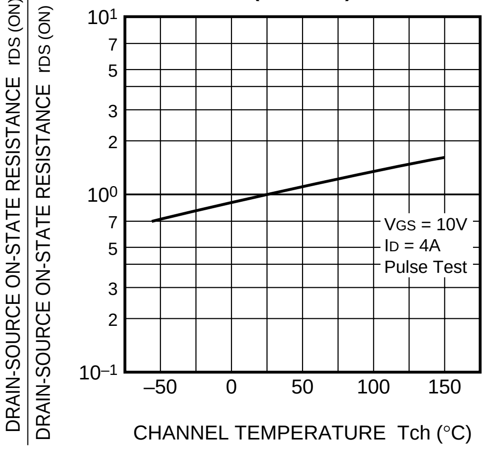


GATE-SOURCE VOLTAGE
VS.GATE CHARGE
(TYPICAL)

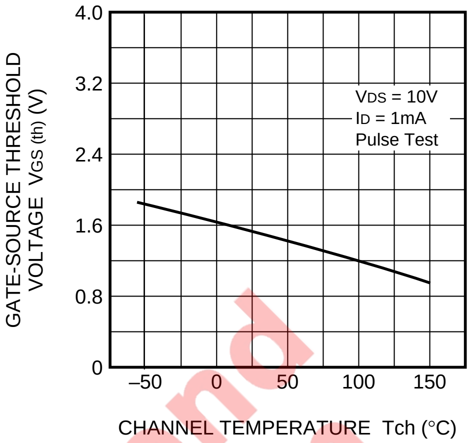


SOURCE-DRAIN DIODE
FORWARD CHARACTERISTICS
(TYPICAL)

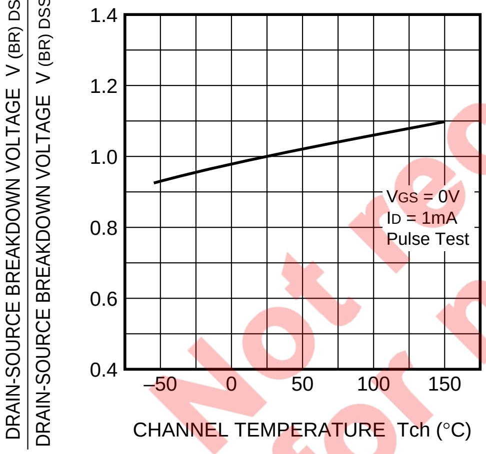
ON-STATE RESISTANCE VS. CHANNEL TEMPERATURE (TYPICAL)



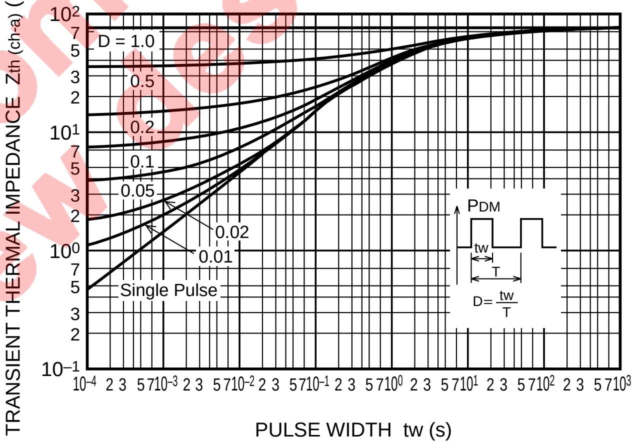
THRESHOLD VOLTAGE VS. CHANNEL TEMPERATURE (TYPICAL)



BREAKDOWN VOLTAGE VS. CHANNEL TEMPERATURE (TYPICAL)

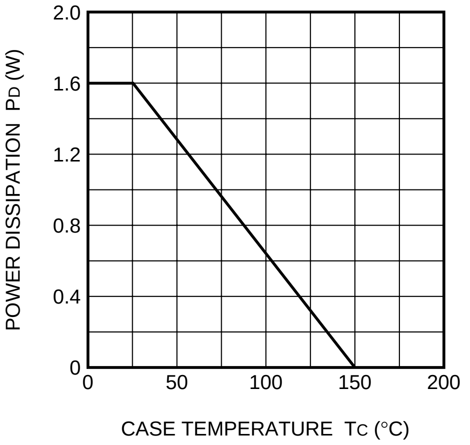


TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS

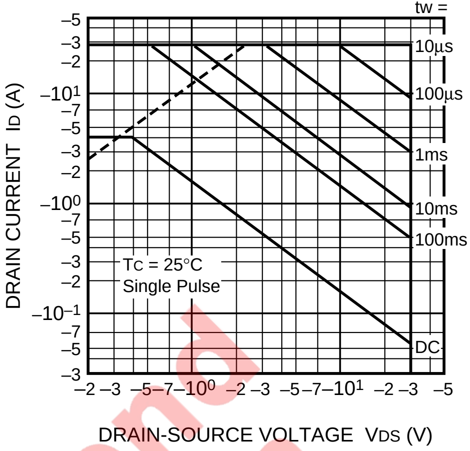


PERFORMANCE CURVES (P-ch)

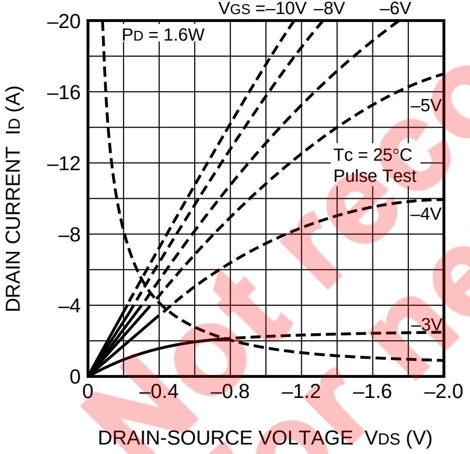
POWER DISSIPATION DERATING CURVE



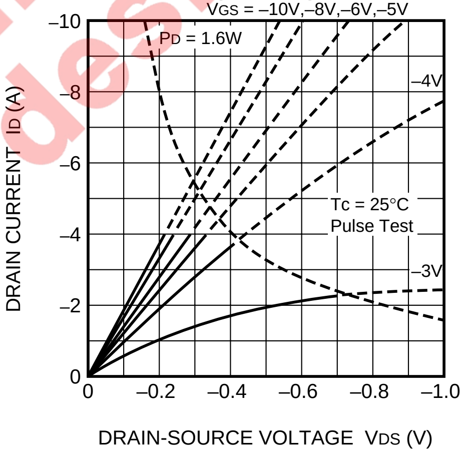
MAXIMUM SAFE OPERATING AREA



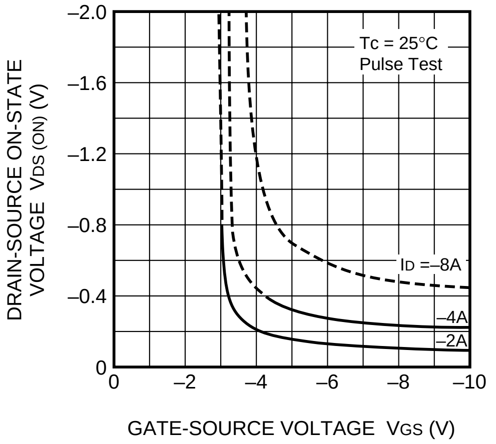
OUTPUT CHARACTERISTICS (TYPICAL)



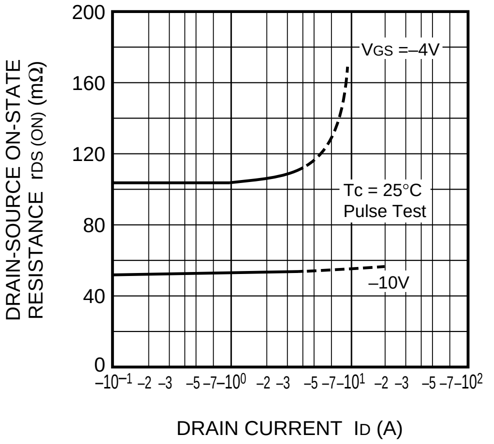
OUTPUT CHARACTERISTICS (TYPICAL)



ON-STATE VOLTAGE VS. GATE-SOURCE VOLTAGE (TYPICAL)



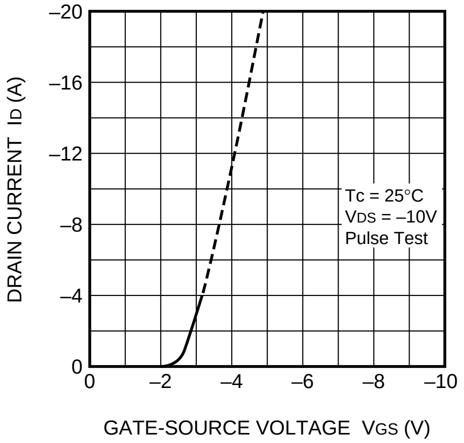
ON-STATE RESISTANCE VS. DRAIN CURRENT (TYPICAL)



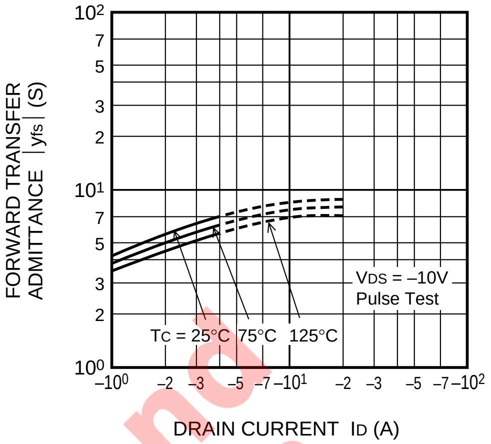
FY4AEJ-03

HIGH-SPEED SWITCHING USE
Nch/Pch POWER MOSFET

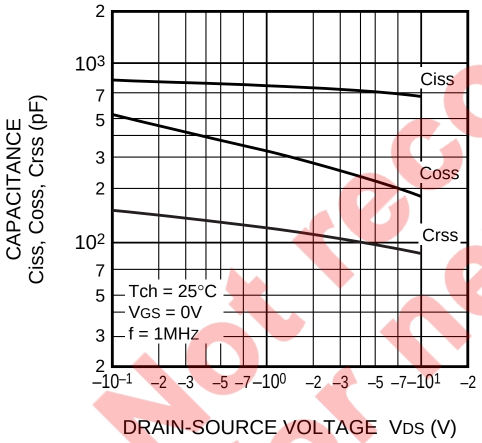
TRANSFER CHARACTERISTICS (TYPICAL)



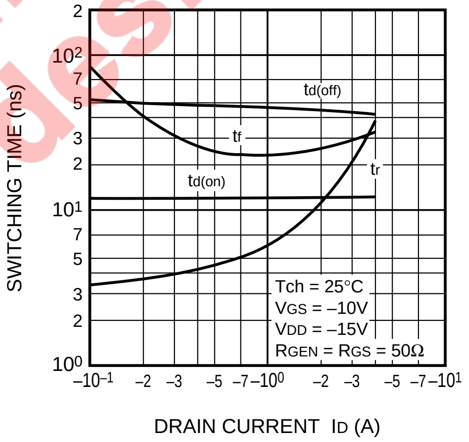
FORWARD TRANSFER ADMITTANCE VS.DRAIN CURRENT (TYPICAL)



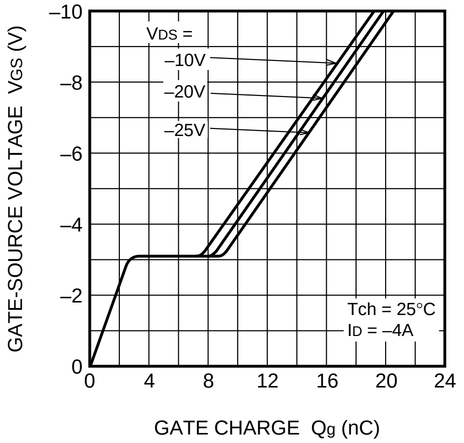
CAPACITANCE VS. DRAIN-SOURCE VOLTAGE (TYPICAL)



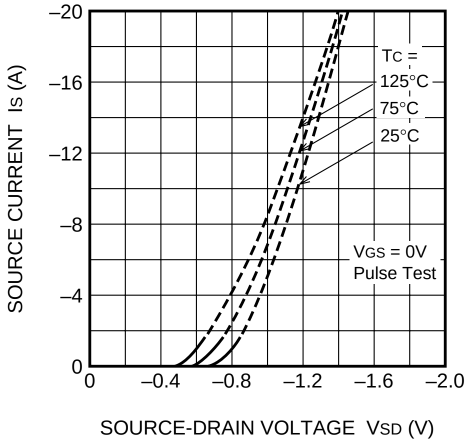
SWITCHING CHARACTERISTICS (TYPICAL)



GATE-SOURCE VOLTAGE VS.GATE CHARGE (TYPICAL)

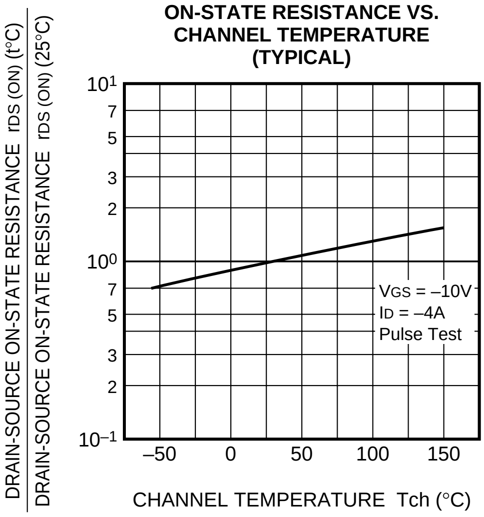


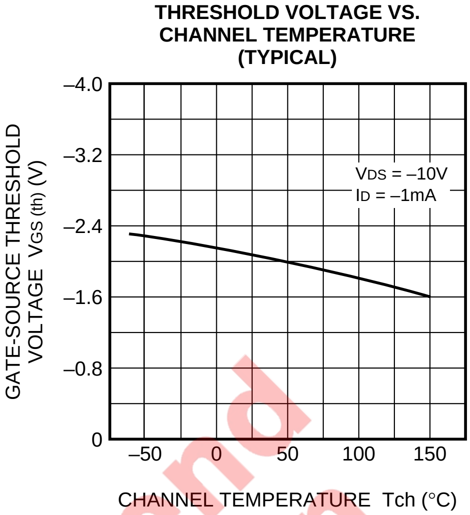
SOURCE-DRAIN DIODE FORWARD CHARACTERISTICS (TYPICAL)

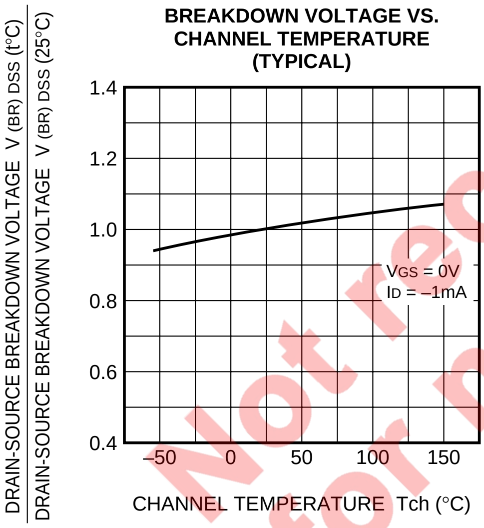


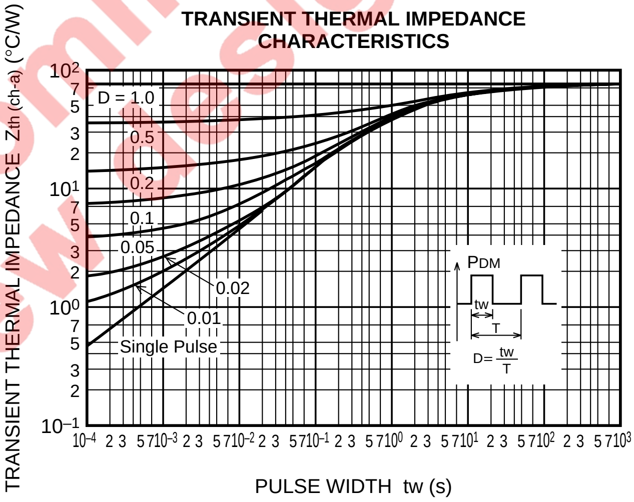
FY4AEJ-03

HIGH-SPEED SWITCHING USE
Nch/Pch POWER MOSFET


ON-STATE RESISTANCE VS. CHANNEL TEMPERATURE (TYPICAL)


THRESHOLD VOLTAGE VS. CHANNEL TEMPERATURE (TYPICAL)


BREAKDOWN VOLTAGE VS. CHANNEL TEMPERATURE (TYPICAL)


TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS