

PRELIMINARY
 Notice: This is not a final specification.
 Some parametric limits are subject to change.

MITSUBISHI POWER MOSFET

FY4AEJ-03

HIGH-SPEED SWITCHING USE
 Nch/Pch POWER MOSFET

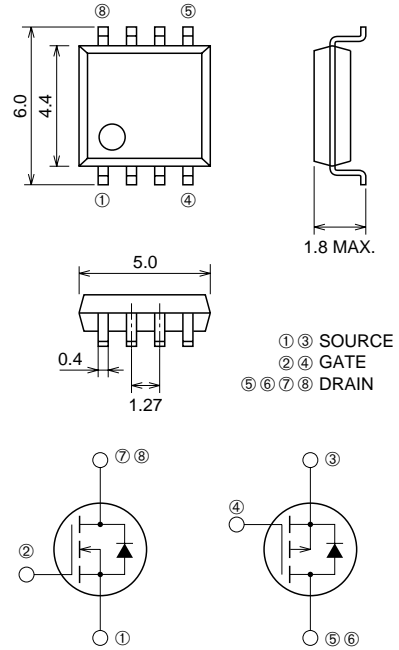
FY4AEJ-03



- 4V DRIVE
- V_{DSS} $\pm 30V$
- $r_{DS(ON)}$ (MAX) $30/80m\Omega$
- I_D $\pm 4A$

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 ($T_c = 25^\circ C$)

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)	$L = 10\mu H$	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		$^\circ C$
T_{stg}	Storage temperature		-55~+150		$^\circ C$
—	Weight	Typical value	0.07		g

Aug. 1999

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ELECTRICAL CHARACTERISTICS (T_{ch} = 25°C)
N-ch

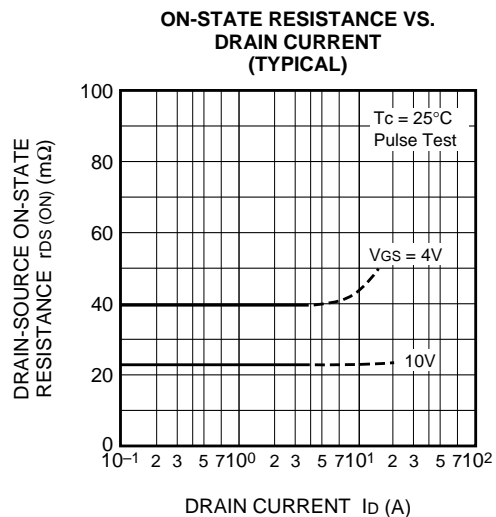
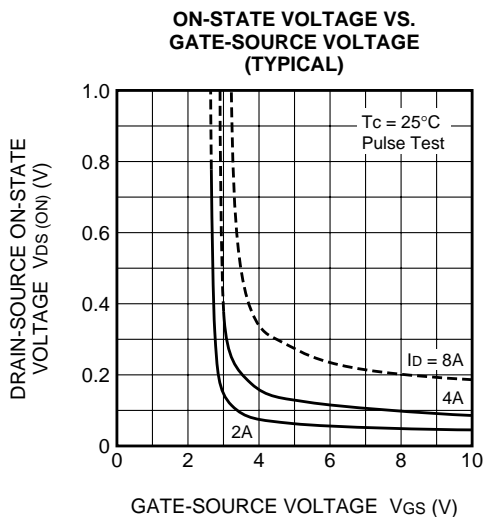
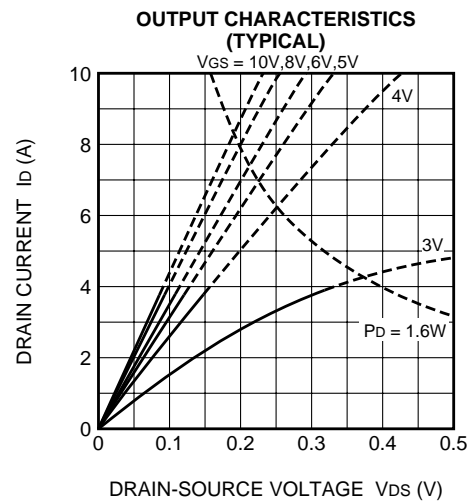
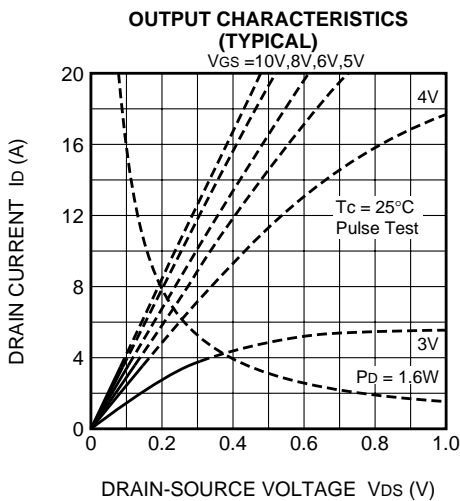
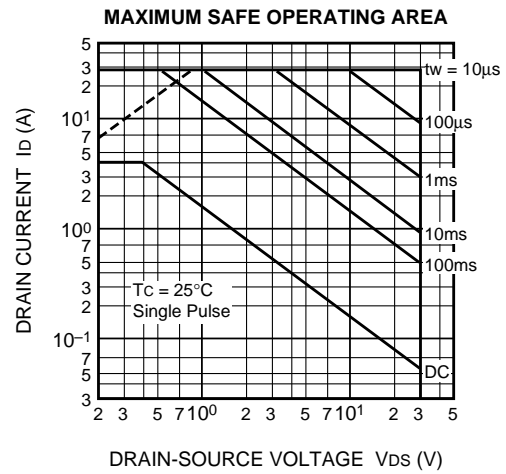
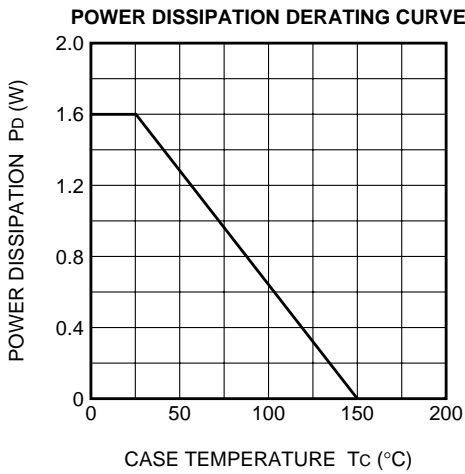
Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
V (BR) DSS	Drain-source breakdown voltage	I _D = 1mA, V _{GS} = 0V	30	—	—	V
I _{GSS}	Gate-source leakage current	V _{GS} = ±20V, V _{DS} = 0V	—	—	±0.1	μA
I _{DSS}	Drain-source leakage current	V _{DS} = 30V, V _{GS} = 0V	—	—	0.1	mA
V _{GS} (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
y _{fs}	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 ambient	—	—	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
y _{fs}	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 ambient	—	—	78.1	°C/W
t _{rr}	Reverse recovery time	I _S = -1.7A, di _s /dt = 50A/μs	—	70	—	ns

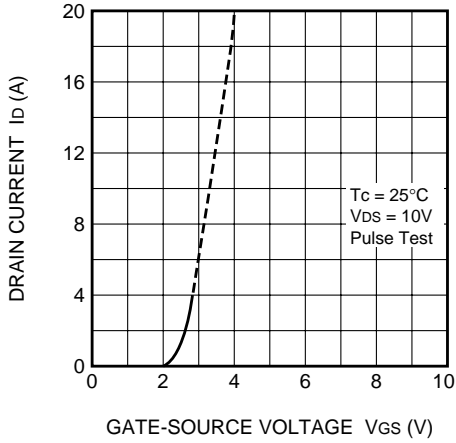
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PERFORMANCE CURVES (N-ch)

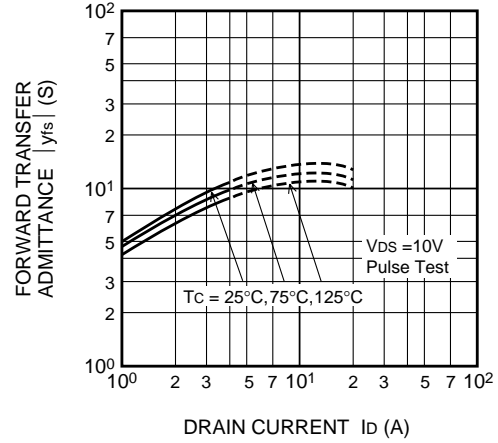


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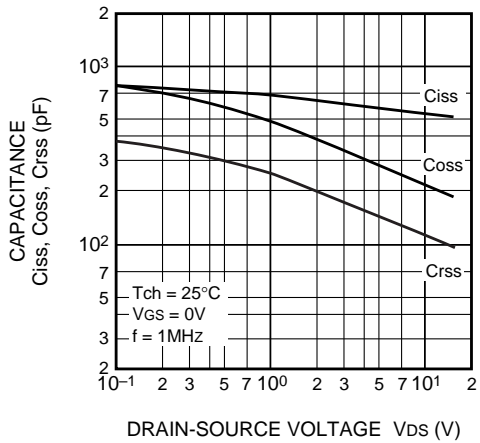
TRANSFER CHARACTERISTICS (TYPICAL)



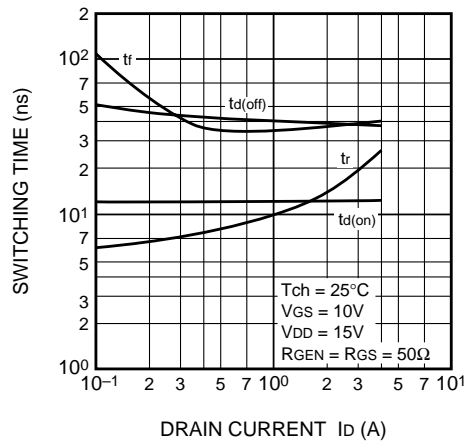
FORWARD TRANSFER ADMITTANCE VS. DRAIN CURRENT (TYPICAL)



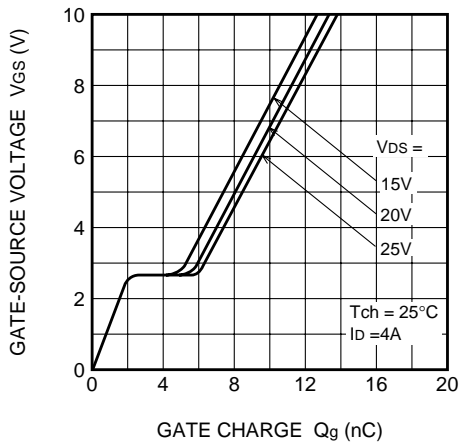
CAPACITANCE VS. DRAIN-SOURCE VOLTAGE (TYPICAL)



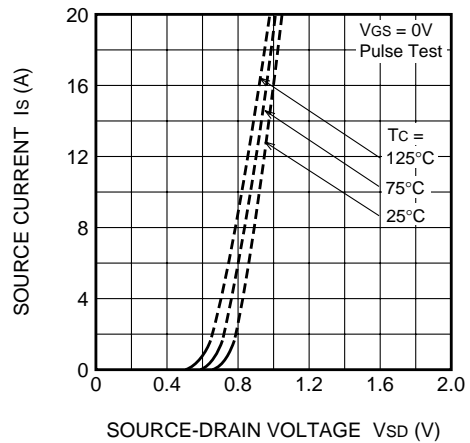
SWITCHING CHARACTERISTICS (TYPICAL)



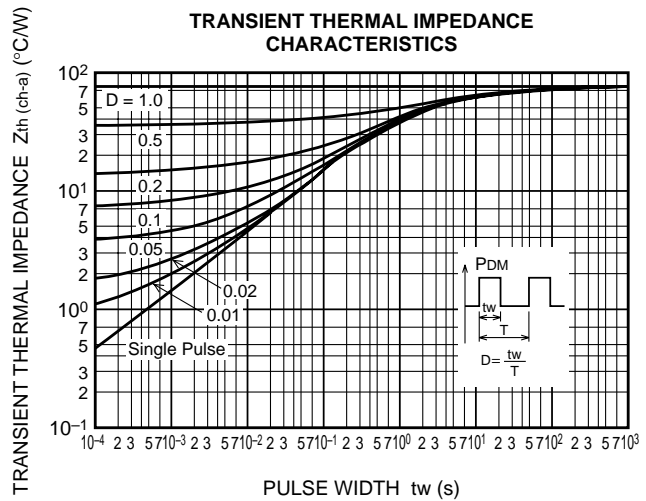
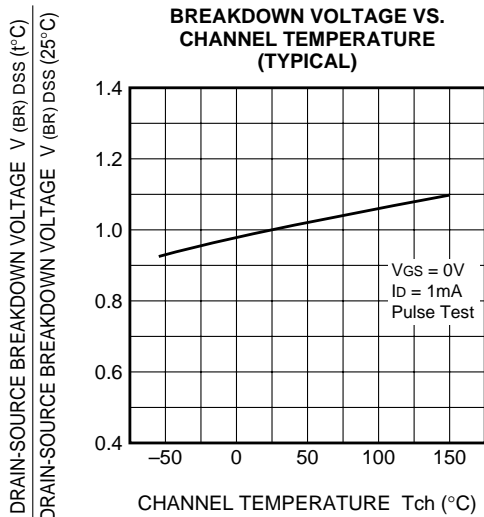
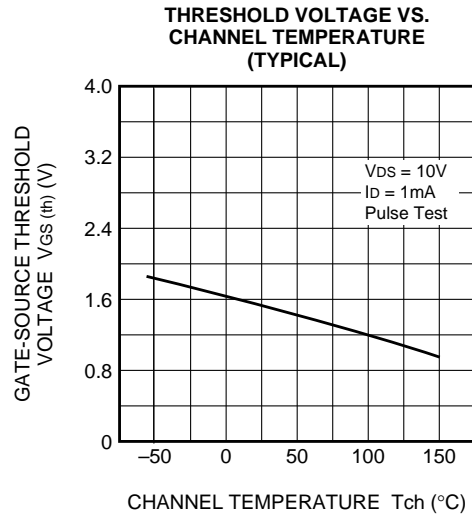
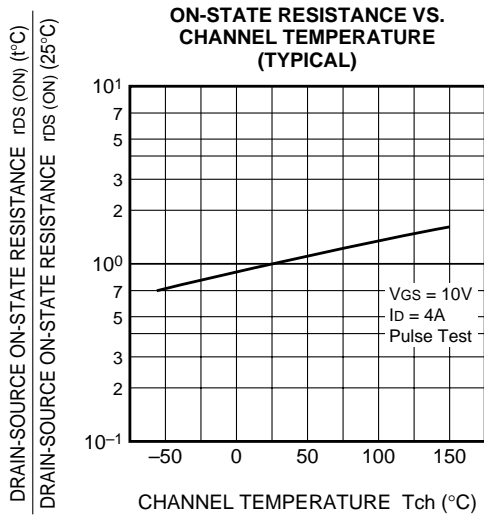
GATE-SOURCE VOLTAGE VS. GATE CHARGE (TYPICAL)



SOURCE-DRAIN DIODE FORWARD CHARACTERISTICS (TYPICAL)

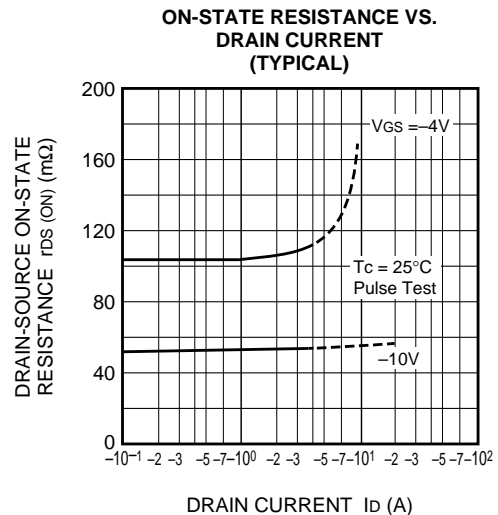
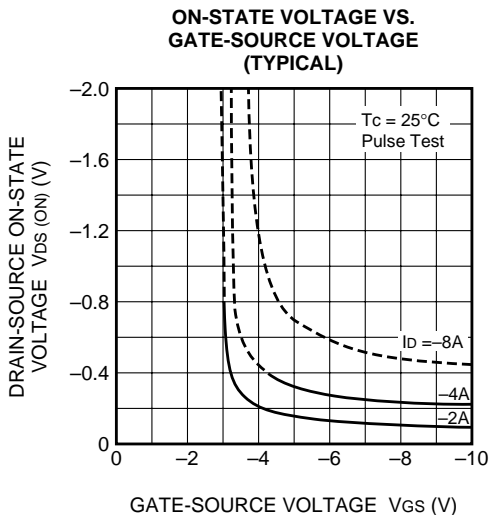
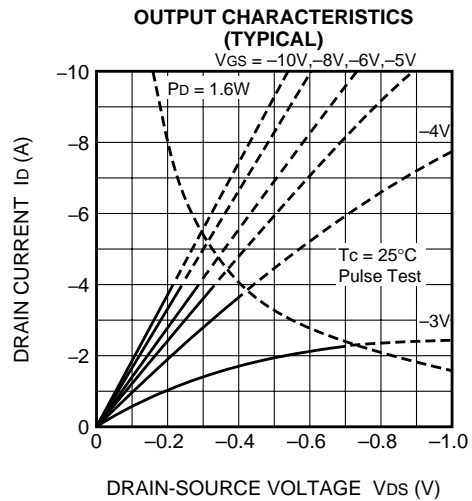
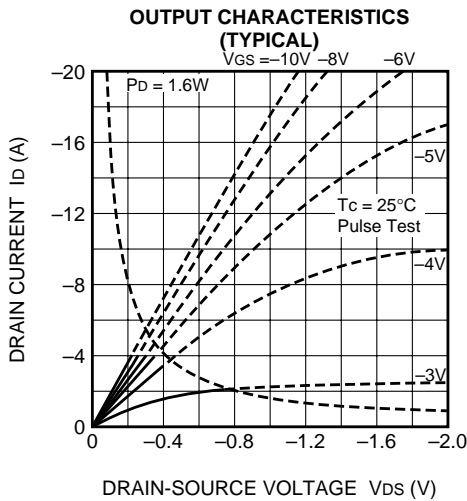
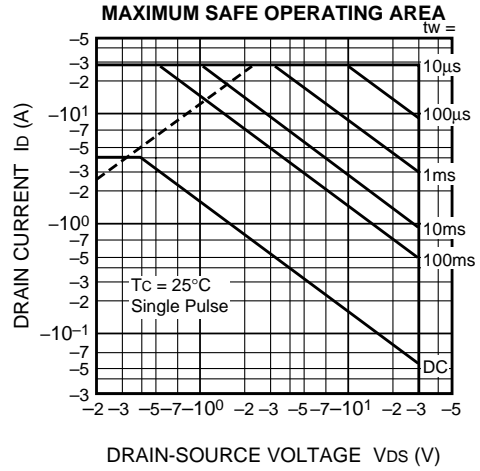
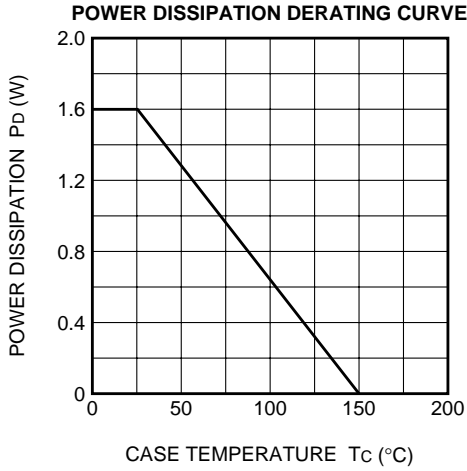


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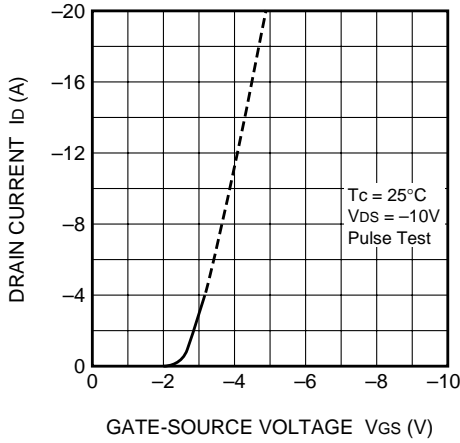
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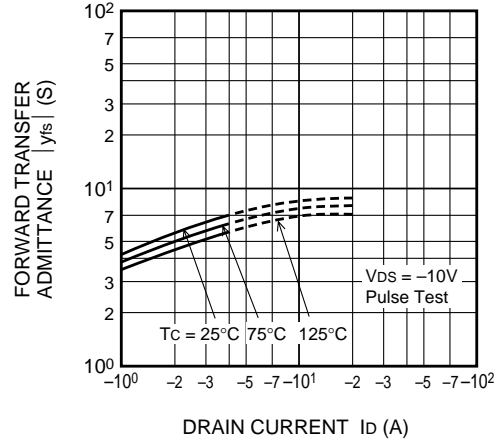


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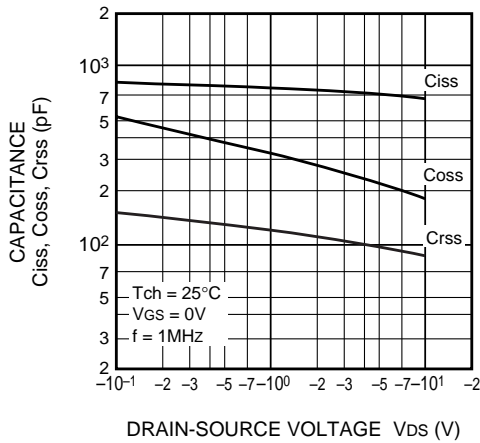
TRANSFER CHARACTERISTICS (TYPICAL)



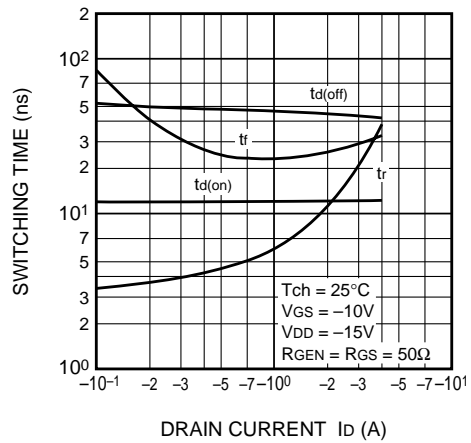
FORWARD TRANSFER ADMITTANCE VS. DRAIN CURRENT (TYPICAL)



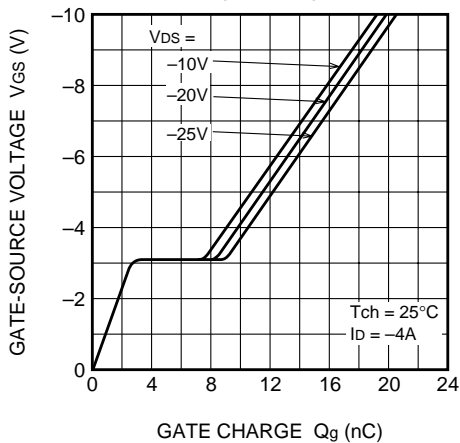
CAPACITANCE VS. DRAIN-SOURCE VOLTAGE (TYPICAL)



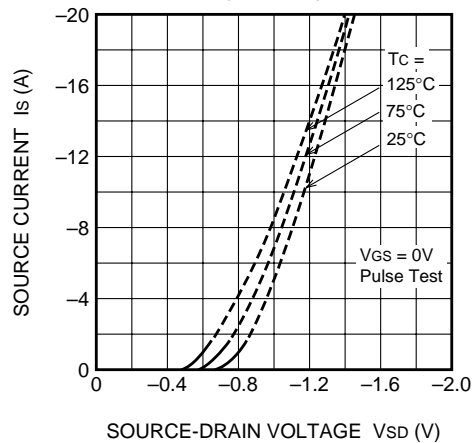
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GATE-SOURCE VOLTAGE VS. GATE CHARGE (TYPICAL)



SOURCE-DRAIN DIODE FORWARD CHARACTERISTICS (TYPICAL)



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