

MITSUBISHI Nch POWER MOSFET

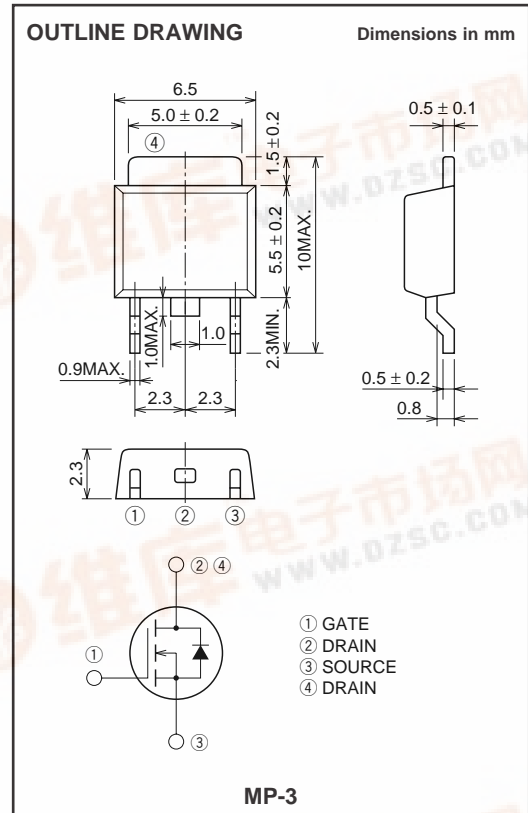
FS30ASH-06

HIGH-SPEED SWITCHING USE

FS30ASH-06



- 2.5V DRIVE
- V_{DSS} 60V
- r_{DS (ON)} (MAX) 30mΩ
- I_D 30A
- Integrated Fast Recovery Diode (TYP.) 65ns



APPLICATION

Motor control, Lamp control, Solenoid control
DC-DC converter, etc.

MAXIMUM RATINGS (T_c = 25°C)

Symbol	Parameter	Conditions	Ratings	Unit
V _{DSS}	Drain-source voltage	V _{GS} = 0V	60	V
V _{GSS}	Gate-source voltage	V _{DS} = 0V	±10	V
I _D	Drain current		30	A
I _{DM}	Drain current (Pulsed)		120	A
I _{DA}	Avalanche drain current (Pulsed)	L = 100μH	30	A
I _S	Source current		30	A
I _{SM}	Source current (Pulsed)		120	A
P _D	Maximum power dissipation		35	W
T _{ch}	Channel temperature		-55 ~ +150	°C
T _{stg}	Storage temperature		-55 ~ +150	°C
—	Weight	Typical value	0.26	g



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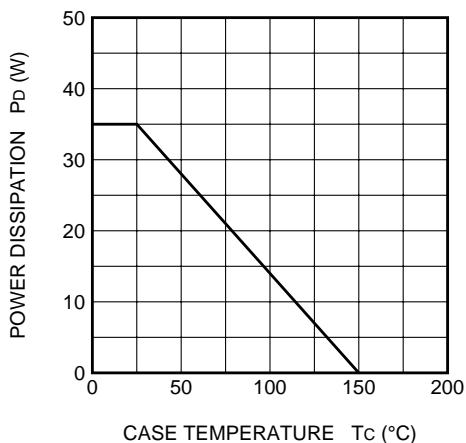
HIGH-SPEED SWITCHING USE

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

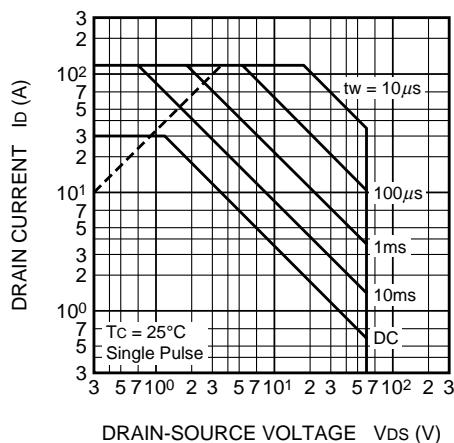
Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
V(BR) _{DSS}	Drain-source breakdown voltage	I _D = 1mA, V _{GS} = 0V	60	—	—	V
I _{GSS}	Gate-source leakage current	V _{GS} = ±10V, V _{DS} = 0V	—	—	±0.1	μA
I _{DSS}	Drain-source leakage current	V _{DS} = 60V, V _{GS} = 0V	—	—	0.1	mA
V _{GS(th)}	Gate-source threshold voltage	I _D = 1mA, V _{DS} = 10V	0.6	0.9	1.2	V
r _{DS(ON)}	Drain-source on-state resistance	I _D = 15A, V _{GS} = 4V	—	25	30	mΩ
r _{DS(ON)}	Drain-source on-state resistance	I _D = 15A, V _{GS} = 2.5V	—	30	39	mΩ
V _{DS(ON)}	Drain-source on-state voltage	I _D = 15A, V _{GS} = 4V	—	0.38	0.45	V
y _{fs}	Forward transfer admittance	I _D = 15A, V _{DS} = 10V	—	34	—	S
C _{iss}	Input capacitance	V _{DS} = 10V, V _{GS} = 0V, f = 1MHz	—	2000	—	pF
C _{oss}	Output capacitance		—	320	—	pF
C _{rss}	Reverse transfer capacitance		—	170	—	pF
t _{d(on)}	Turn-on delay time	V _{DD} = 30V, I _D = 15A, V _{GS} = 4V, R _{GEN} = R _{GS} = 50Ω	—	33	—	ns
t _r	Rise time		—	135	—	ns
t _{d(off)}	Turn-off delay time		—	145	—	ns
t _f	Fall time		—	150	—	ns
V _{SD}	Source-drain voltage	I _S = 15A, V _{GS} = 0V	—	1.0	1.5	V
R _{th(ch-c)}	Thermal resistance	Channel to case	—	—	3.57	°C/W
t _{rr}	Reverse recovery time	I _S = 30A, di/dt = -100A/μs	—	65	—	ns

PERFORMANCE CURVES

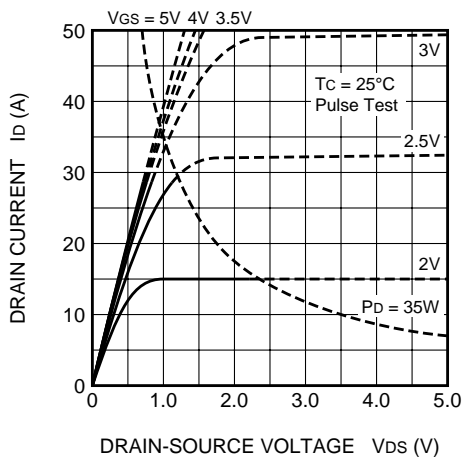
POWER DISSIPATION DERATING CURVE



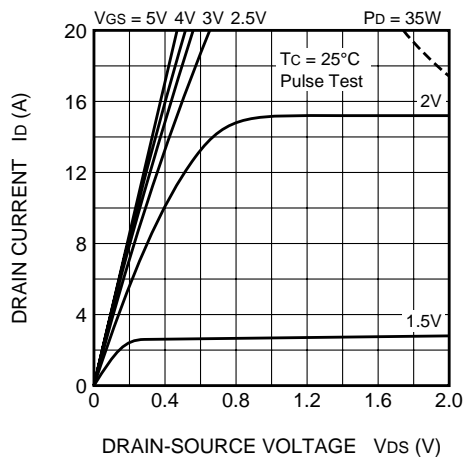
MAXIMUM SAFE OPERATING AREA



OUTPUT CHARACTERISTICS (TYPICAL)



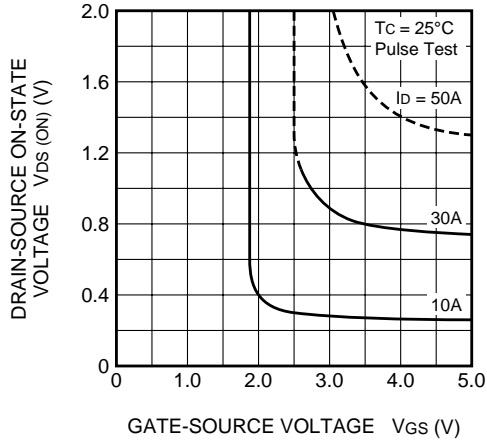
OUTPUT CHARACTERISTICS (TYPICAL)



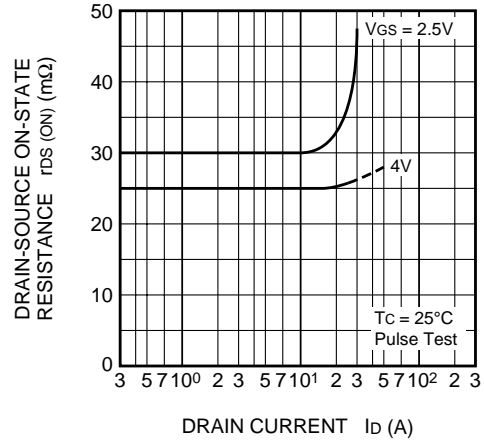
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HIGH-SPEED SWITCHING USE

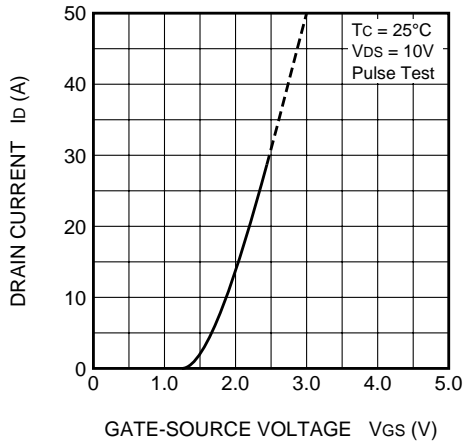
ON-STATE VOLTAGE VS. GATE-SOURCE VOLTAGE (TYPICAL)



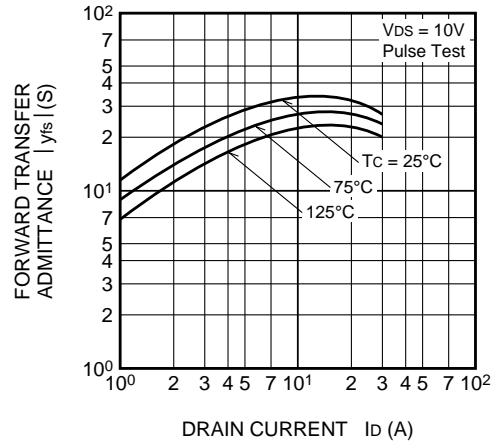
ON-STATE RESISTANCE VS. DRAIN CURRENT (TYPICAL)



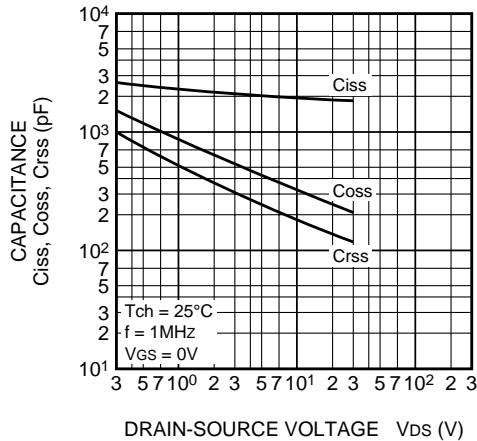
TRANSFER CHARACTERISTICS (TYPICAL)



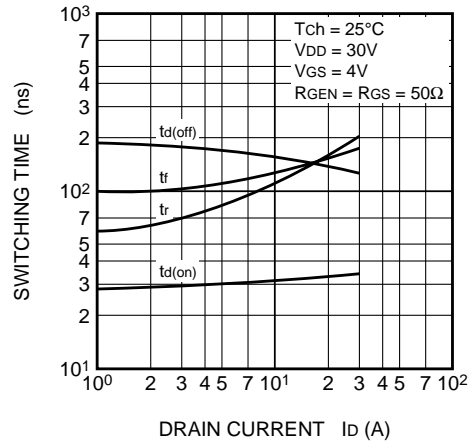
FORWARD TRANSFER ADMITTANCE VS. DRAIN CURRENT (TYPICAL)



CAPACITANCE VS. DRAIN-SOURCE VOLTAGE (TYPICAL)



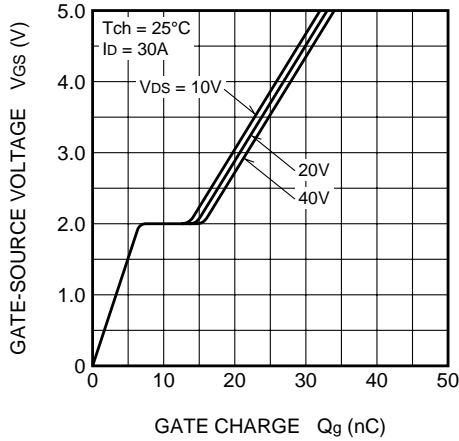
SWITCHING CHARACTERISTICS (TYPICAL)



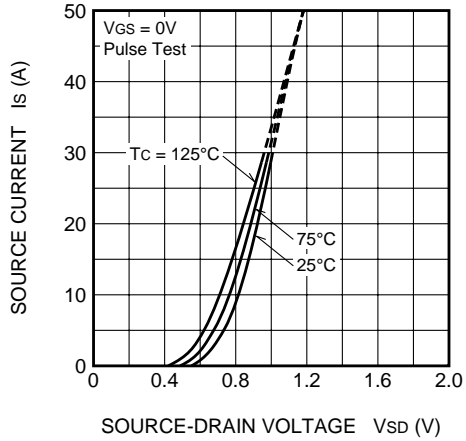
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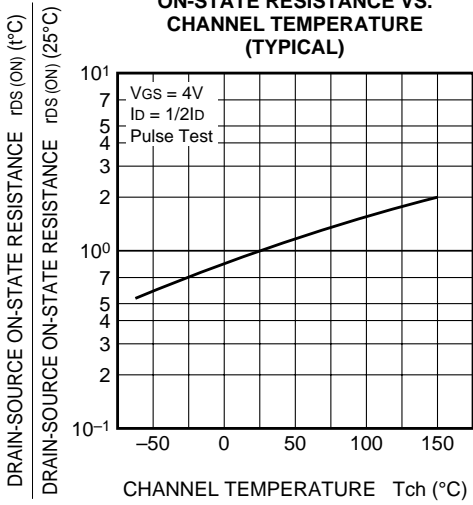
GATE-SOURCE VOLTAGE VS. GATE CHARGE (TYPICAL)



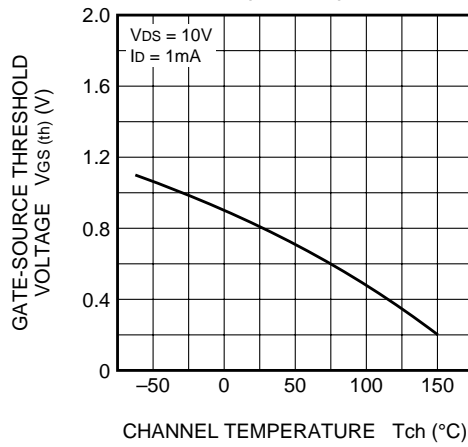
SOURCE-DRAIN DIODE FORWARD CHARACTERISTICS (TYPICAL)



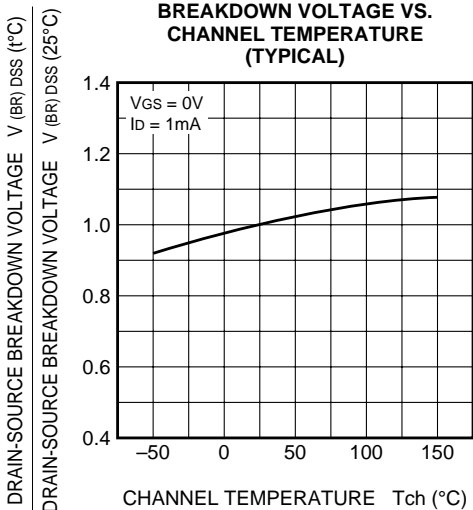
ON-STATE RESISTANCE VS. CHANNEL TEMPERATURE (TYPICAL)



THRESHOLD VOLTAGE VS. CHANNEL TEMPERATURE (TYPICAL)



BREAKDOWN VOLTAGE VS. CHANNEL TEMPERATURE (TYPICAL)



TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS

