


# FS30ASH-06

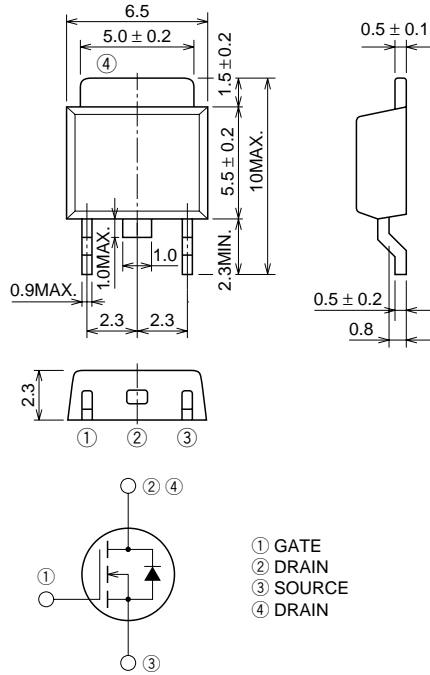
HIGH-SPEED SWITCHING USE

**FS30ASH-06**



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

**OUTLINE DRAWING** Dimensions in mm



MP-3

① GATE  
② DRAIN  
③ SOURCE  
④ DRAIN

**APPLICATION**

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

**MAXIMUM RATINGS** ( $T_c = 25^\circ C$ )

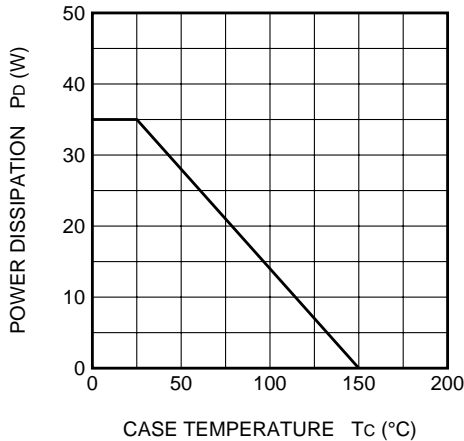
Symbol	Parameter	Conditions	Ratings	Unit
$V_{DSS}$	Drain-source voltage	$V_{GS} = 0V$	60	V
$V_{GSS}$	Gate-source voltage	$V_{DS} = 0V$	$\pm 10$	V
$I_D$	Drain current		30	A
$I_{DM}$	Drain current (Pulsed)		120	A
$I_{DA}$	Avalanche drain current (Pulsed)	$L = 100\mu H$	30	A
$I_S$	Source current		30	A
$I_{SM}$	Source current (Pulsed)		120	A
$P_D$	Maximum power dissipation		35	W
$T_{ch}$	Channel temperature		$-55 \sim +150$	$^\circ C$
$T_{stg}$	Storage temperature		$-55 \sim +150$	$^\circ C$
—	Weight	Typical value	0.26	g

**ELECTRICAL CHARACTERISTICS** (T<sub>ch</sub> = 25°C)

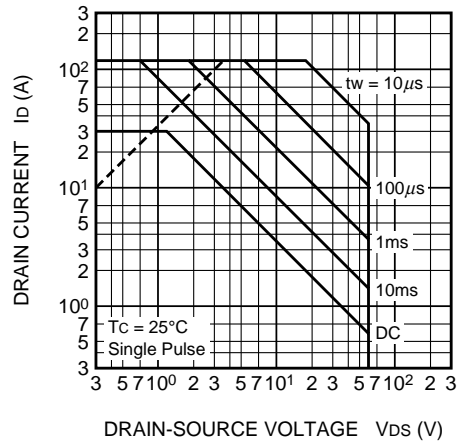
Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
V <sub>(BR)DSS</sub>	Drain-source breakdown voltage	I <sub>D</sub> = 1mA, V <sub>GS</sub> = 0V	60	—	—	V
I <sub>GSS</sub>	Gate-source leakage current	V <sub>GS</sub> = ±10V, V <sub>DS</sub> = 0V	—	—	±0.1	μA
I <sub>DSS</sub>	Drain-source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

**PERFORMANCE CURVES**

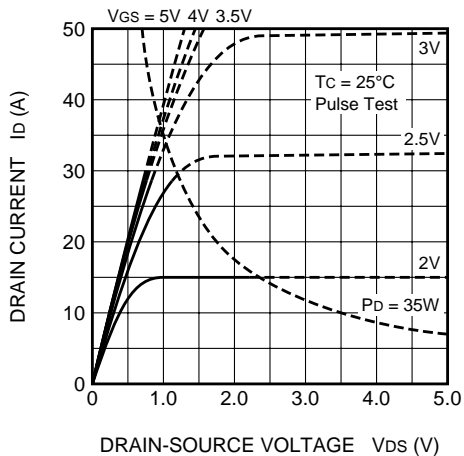
**POWER DISSIPATION DERATING CURVE**



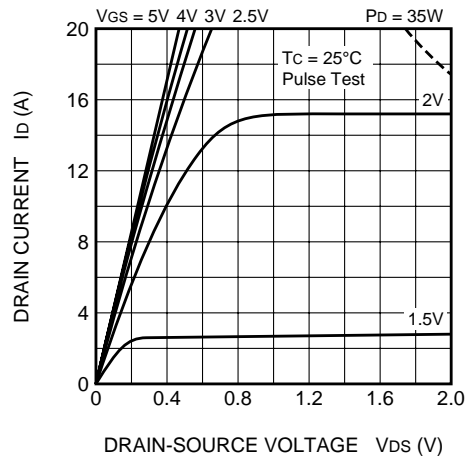
**MAXIMUM SAFE OPERATING AREA**



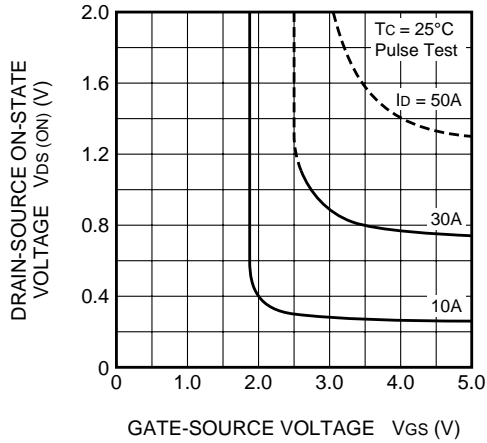
**OUTPUT CHARACTERISTICS (TYPICAL)**



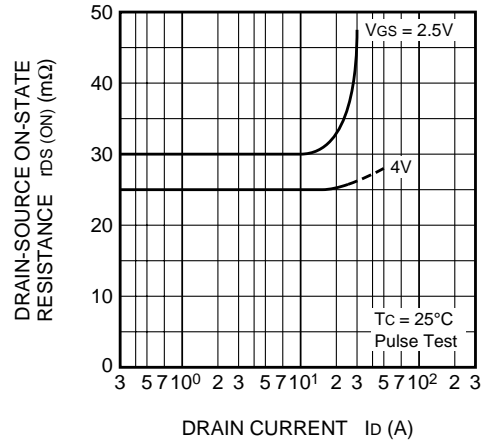
**OUTPUT CHARACTERISTICS (TYPICAL)**



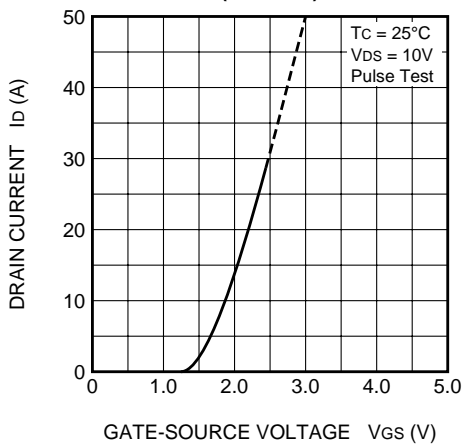
ON-STATE VOLTAGE VS. GATE-SOURCE VOLTAGE (TYPICAL)



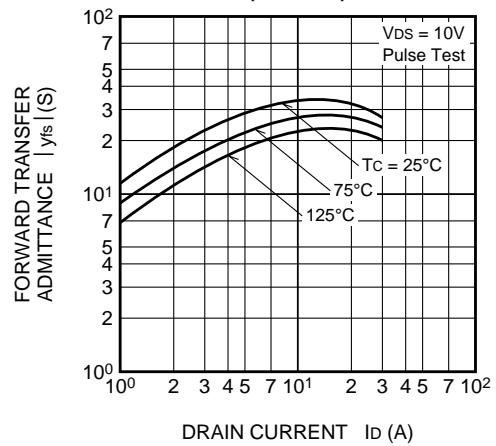
ON-STATE RESISTANCE VS. DRAIN CURRENT (TYPICAL)



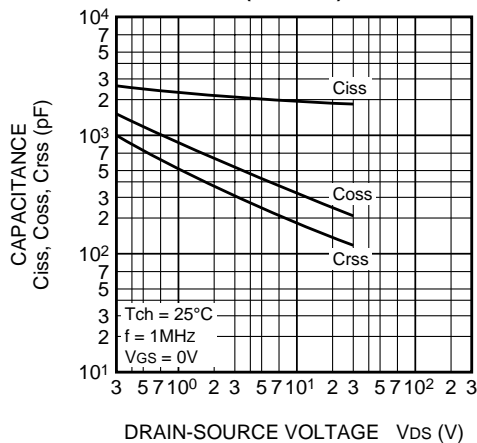
TRANSFER CHARACTERISTICS (TYPICAL)



FORWARD TRANSFER ADMITTANCE VS. DRAIN CURRENT (TYPICAL)



CAPACITANCE VS. DRAIN-SOURCE VOLTAGE (TYPICAL)



SWITCHING CHARACTERISTICS (TYPICAL)

