



FS30KMJ-06F

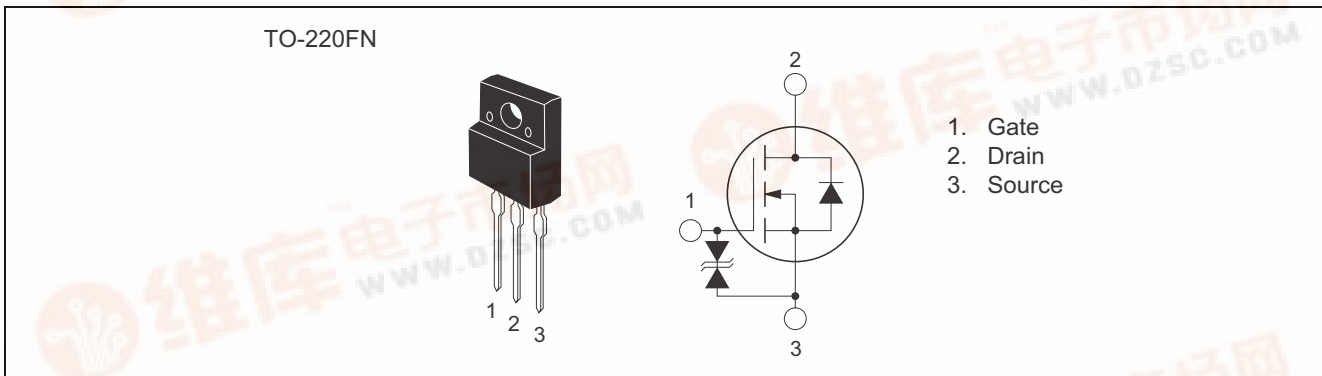
High-Speed Switching Use
Nch Power MOS FET

REJ03G0254-0100
Rev.1.00
Aug.20.2004

Features

- Drive voltage : 4 V
- V_{DSS} : 60 V
- $r_{DS(ON)(max)}$: 22 m Ω
- I_D : 30 A
- Recovery Time of the Integrated Fast Recovery Diode (TYP.) : 50 ns

Outline



Applications

Motor control, lamp control, solenoid control, DC-DC converters, etc.

Maximum Ratings

(Tc = 25°C)

Parameter	Symbol	Ratings	Unit	Conditions
Drain-source voltage	V_{DSS}	60	V	$V_{GS} = 0 V$
Gate-source voltage	V_{GSS}	± 20	V	$V_{DS} = 0 V$
Drain current	I_D	30	A	
Drain current (Pulsed)	I_{DM}	120	A	
Avalanche current (Pulsed)	I_{DA}	30	A	$L = 10 \mu H$
Source current	I_S	30	A	
Source current (Pulsed)	I_{SM}	120	A	
Maximum power dissipation	P_D	25	W	
Channel temperature	T_{ch}	- 55 to +150	°C	
Storage temperature	T_{stg}	- 55 to +150	°C	
Isolation voltage	V_{iso}	2000	V	AC 1 minute, Terminal to case
Mass	—	2.0	g	Typical value

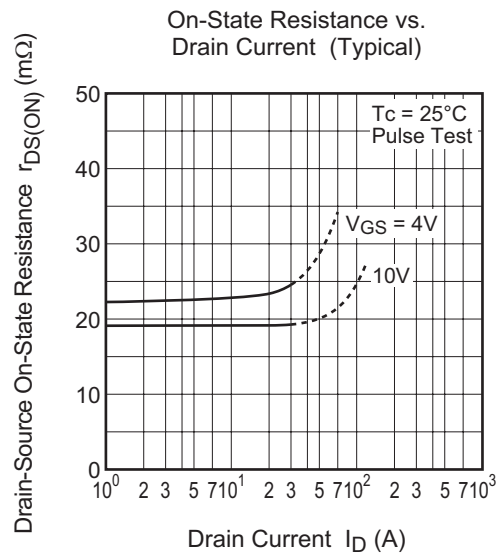
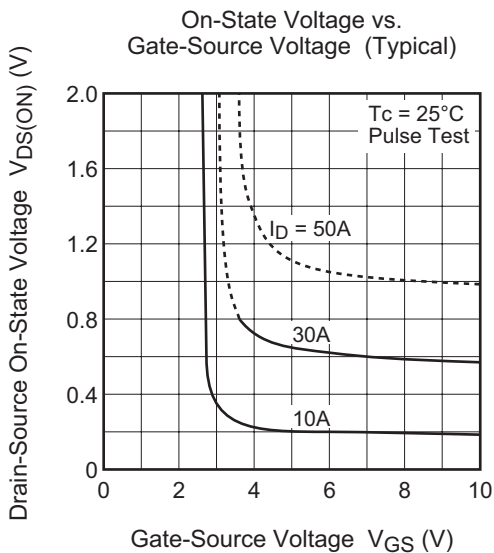
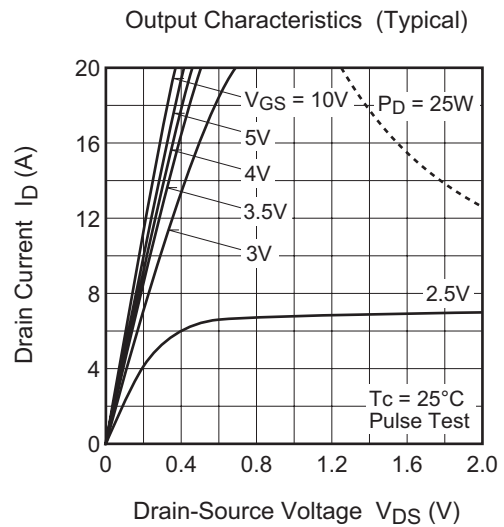
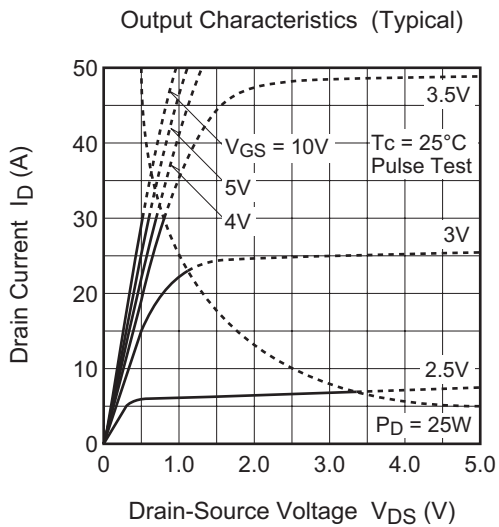
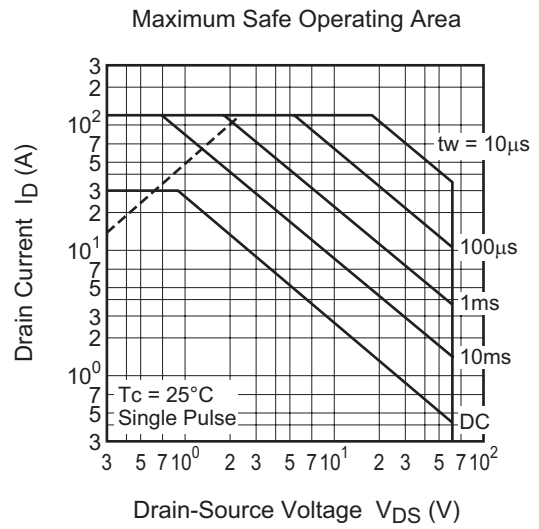
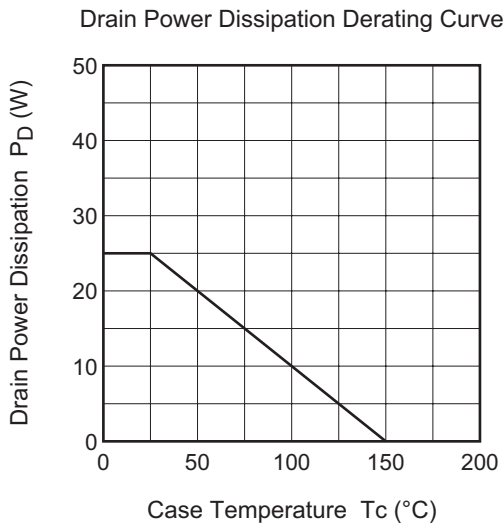


Electrical Characteristics

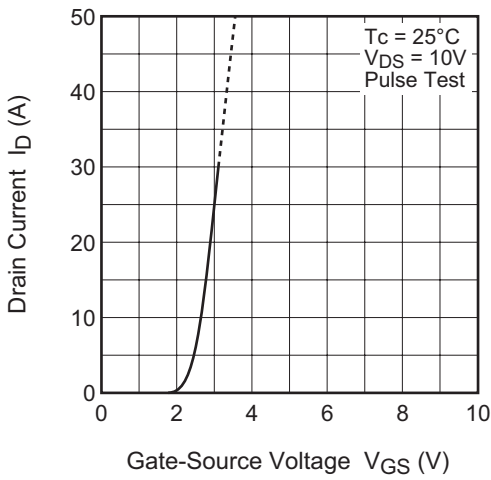
(T_{ch} = 25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test conditions
Drain-source breakdown voltage	V _{(BR)DSS}	60	—	—	V	I _D = 1 mA, V _{GS} = 0 V
Gate-source breakdown voltage	V _{(BR)GSS}	±20	—	—	V	I _G = ±100 μA, V _{DS} = 0 V
Drain-source leakage current	I _{DSS}	—	—	100	μA	V _{DS} = 60 V, V _{GS} = 0 V
Gate-source leakage current	I _{GSS}	—	—	±10	μA	V _{GS} = ±20 V, V _{DS} = 0 V
Gate-source threshold voltage	V _{GS(th)}	1.0	1.5	2.0	V	I _D = 1 mA, V _{DS} = 10 V
Drain-source on-state resistance	r _{DS(ON)}	—	18	22	mΩ	I _D = 15 A, V _{GS} = 10 V
Drain-source on-state resistance	r _{DS(ON)}	—	22	28	mΩ	I _D = 15 A, V _{GS} = 4 V
Drain-source on-state voltage	V _{DS(ON)}	—	0.27	0.33	V	I _D = 15 A, V _{GS} = 10 V
Forward transfer admittance	y _{fs}	—	38	—	S	I _D = 15 A, V _{DS} = 10 V
Input capacitance	C _{iss}	—	2600	—	pF	V _{DS} = 10 V, V _{GS} = 0 V, f = 1MHz
Output capacitance	C _{oss}	—	385	—	pF	
Reverse transfer capacitance	C _{rss}	—	200	—	pF	
Turn-on delay time	t _{d(on)}	—	13	—	ns	V _{DD} = 30 V, I _D = 15 A, V _{GS} = 10 V, R _{GEN} = R _{GS} = 50 Ω
Rise time	t _r	—	45	—	ns	
Turn-off delay time	t _{d(off)}	—	240	—	ns	
Fall time	t _f	—	100	—	ns	
Source-drain voltage	V _{SD}	—	1.0	1.5	V	I _S = 15 A, V _{GS} = 0 V
Thermal resistance	R _{th(ch-c)}	—	—	5.00	°C/W	Channel to case
Reverse recovery time	t _{rr}	—	50	—	ns	I _S = 30 A, dis/dt = - 100 A/μs

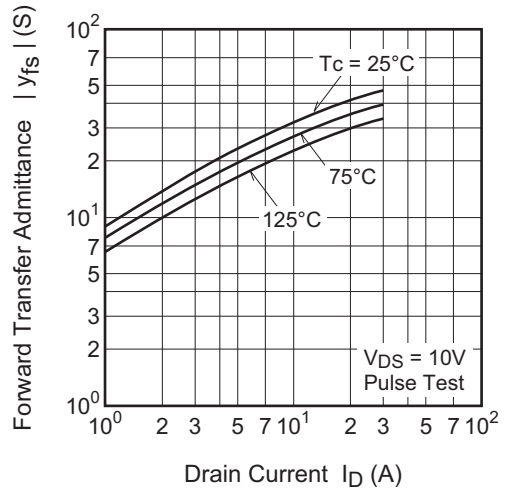
Performance Curves



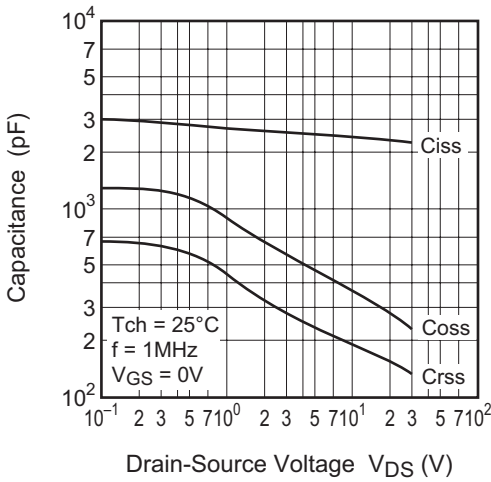
Transfer Characteristics (Typical)



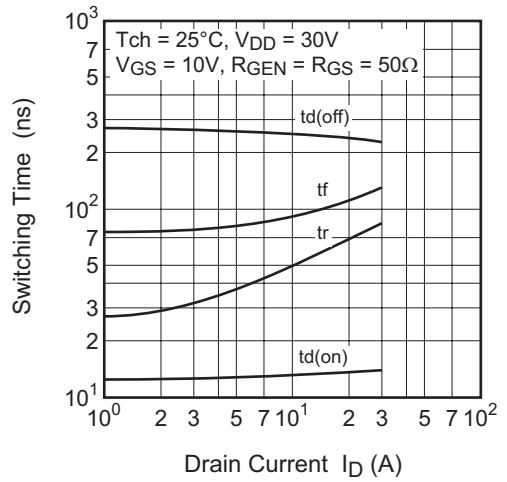
Forward Transfer Admittance vs. Drain Current (Typical)



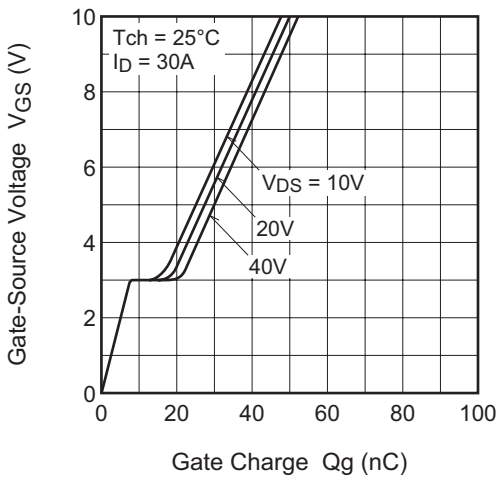
Capacitance vs. Drain-Source Voltage (Typical)



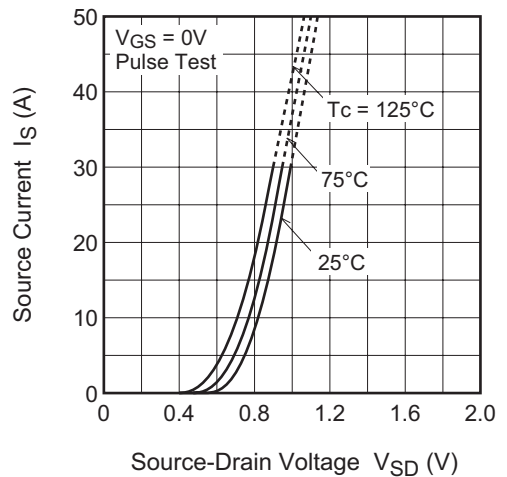
Switching Characteristics (Typical)

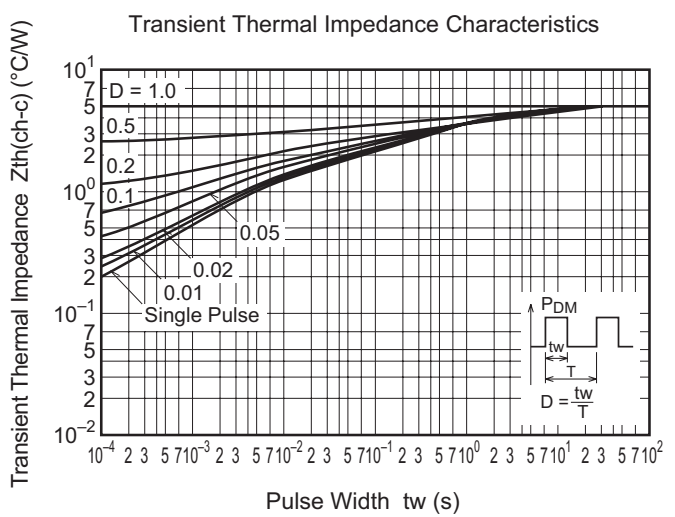
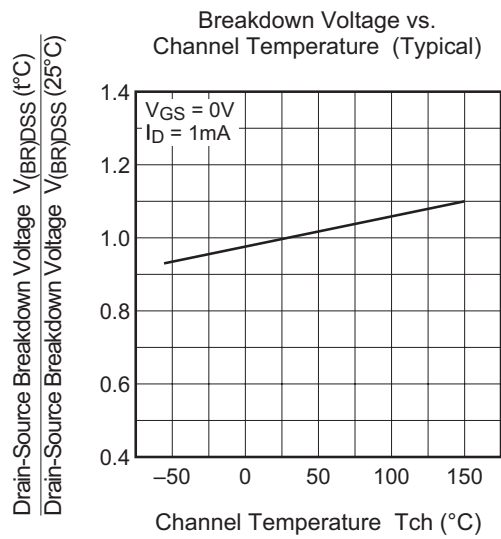
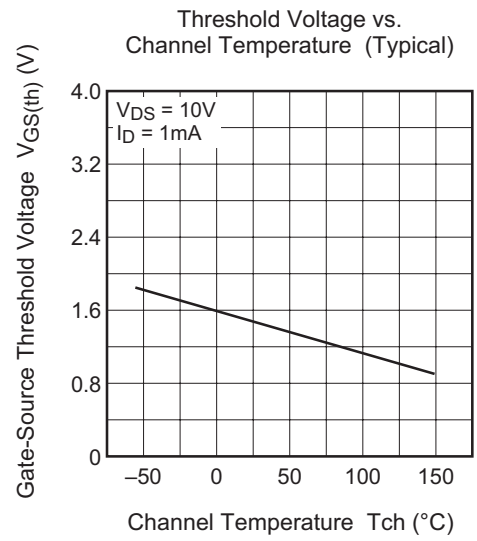
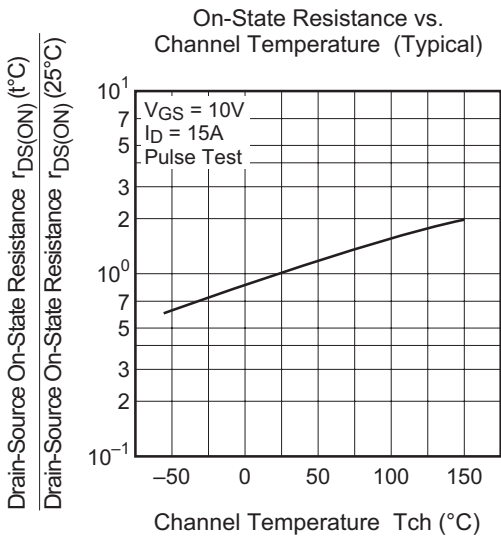


Gate-Source Voltage vs. Gate Charge (Typical)

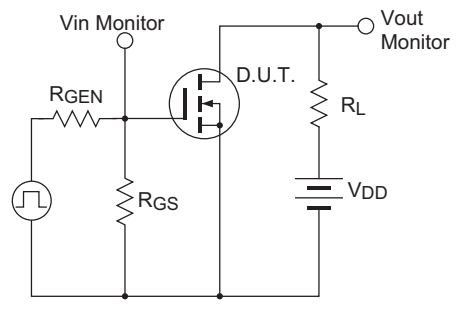


Source-Drain Diode Forward Characteristics (Typical)

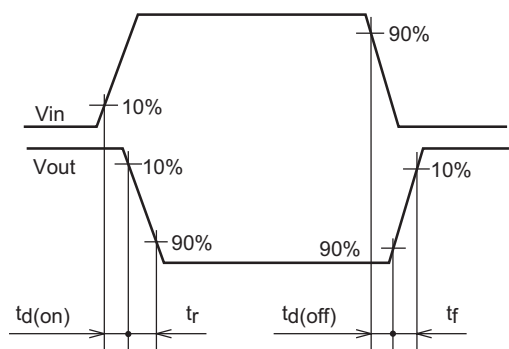




Switching Time Measurement Circuit



Switching Waveform



Package Dimensions

TO-220FN

EIAJ Package Code	JEDEC Code	Mass (g) (reference value)	Lead Material
—	—	2.0	Cu alloy

Technical drawing showing dimensions for TO-220FN package:

- Top view: Overall width 10 ± 0.3 , distance from top edge to mounting hole center 3 ± 0.3 , mounting hole diameter $\phi 3.2 \pm 0.2$, distance from mounting hole center to lead center 6.5 ± 0.3 , lead spacing 1.1 ± 0.2 , lead diameter 0.75 ± 0.15 , lead length 14 ± 0.5 , distance from bottom edge to lead center 3.6 ± 0.3 , distance from bottom edge to lead center (total) 2.54 ± 0.25 .
- Side view: Lead diameter 2.8 ± 0.2 , lead length 0.75 ± 0.15 .
- Lead view: Lead diameter 2.8 ± 0.2 , lead length 4.5 ± 0.2 , distance from lead tip to mounting hole center 2.6 ± 0.2 .

Note 1) The dimensional figures indicate representative values unless otherwise the tolerance is specified.

Symbol	Dimension in Millimeters		
	Min	Typ	Max
A	—	—	—
A ₁	—	—	—
A ₂	—	—	—
b	—	—	—
D	—	—	—
E	—	—	—
e	—	—	—
x	—	—	—
y	—	—	—
y ₁	—	—	—
ZD	—	—	—
ZE	—	—	—

Order Code

Lead form	Standard packing	Quantity	Standard order code	Standard order code example
Straight type	Plastic Magazine (Tube)	50	Type name	FS30KMJ-06F
Lead form	Plastic Magazine (Tube)	50	Type name – Lead forming code	FS30KMJ-06F-A8

Note : Please confirm the specification about the shipping in detail.

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