

General Description

This planar stripe MOSFET has better characteristics, such as fast switching time, low on resistance, low gate charge and excellent avalanche characteristics. It is mainly suitable for active power factor correction and switching mode power supplies.

FEATURES

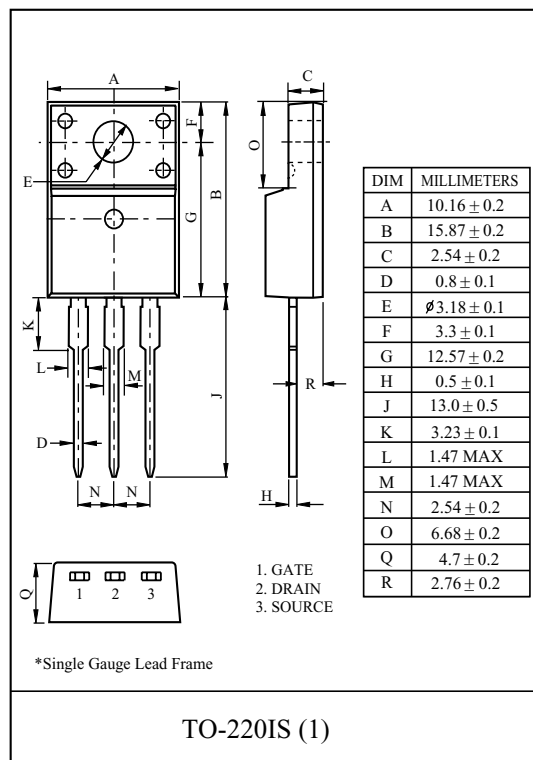
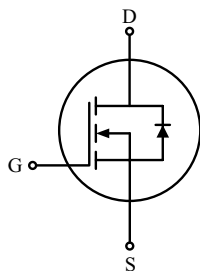
- $V_{DS}=700V$, $I_D=6A$
- Drain-Source ON Resistance :
 $R_{DS(ON)}(Max)=1.65\Omega$ @ $V_{GS}=10V$
- $Q_g(typ.)=19nC$

MAXIMUM RATING (Tc=25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Drain-Source Voltage		V_{DS}	700	V
Gate-Source Voltage		V_{GS}	± 30	V
Drain Current	@T _c =25°C	I_D	6*	A
	@T _c =100°C		4*	
	Pulsed (Note1)	I_{DP}	15*	
Single Pulsed Avalanche Energy (Note 2)		E_{AS}	160	mJ
Repetitive Avalanche Energy (Note 1)		E_{AR}	4.2	mJ
Peak Diode Recovery dv/dt (Note 3)		dv/dt	4.5	V/ns
Drain Power Dissipation	Tc=25°C	P_D	41	W
	Derate above 25°C		0.33	W/°C
Maximum Junction Temperature		T_j	150	°C
Storage Temperature Range		T_{stg}	-55 ~ 150	°C
Thermal Characteristics				
Thermal Resistance, Junction-to-Case		R_{thJC}	3.05	°C/W
Thermal Resistance, Junction-to-Ambient		R_{thJA}	62.5	°C/W

* : Drain current limited by maximum junction temperature.

PIN CONNECTION



KF6N70F

ELECTRICAL CHARACTERISTICS (Tc=25℃)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Static						
Drain-Source Breakdown Voltage	BV _{DSS}	I _D =250μA, V _{GS} =0V	700	-	-	V
Breakdown Voltage Temperature Coefficient	Δ BV _{DSS} /Δ T _j	I _D =250μA, Referenced to 25℃	-	0.65	-	V/℃
Drain Cut-off Current	I _{DSS}	V _{DS} =700V, V _{GS} =0V	-	-	10	μA
Gate Threshold Voltage	V _{th}	V _{DS} =V _{GS} , I _D =250μA	2.5	-	4.5	V
Gate Leakage Current	I _{GSS}	V _{GS} =± 30V, V _{DS} =0V	-	-	± 100	nA
Drain-Source ON Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =3A	-	1.42	1.65	Ω
Dynamic						
Total Gate Charge	Q _g	V _{DS} =560V, I _D =6A V _{GS} =10V (Note4,5)	-	19	-	nC
Gate-Source Charge	Q _{gs}		-	4	-	
Gate-Drain Charge	Q _{gd}		-	8	-	
Turn-on Delay time	t _{d(on)}	V _{DD} =350V I _D =6A R _G =25Ω (Note4,5)	-	34	-	ns
Turn-on Rise time	t _r		-	32	-	
Turn-off Delay time	t _{d(off)}		-	90	-	
Turn-off Fall time	t _f		-	33	-	
Input Capacitance	C _{iss}	V _{DS} =25V, V _{GS} =0V, f=1.0MHz		785	-	pF
Output Capacitance	C _{oss}		-	91	-	
Reverse Transfer Capacitance	C _{rss}		-	9.1	-	
Source-Drain Diode Ratings						
Continuous Source Current	I _S	V _{GS} <V _{th}	-	-	6	A
Pulsed Source Current	I _{SP}		-	-	24	
Diode Forward Voltage	V _{SD}	I _S =6.0A, V _{GS} =0V	-	-	1.4	V
Reverse Recovery Time	t _{rr}	I _S =6.0A, V _{GS} =0V,	-	345	-	ns
Reverse Recovery Charge	Q _{rr}	dI _S /dt=100A/μs	-	3	-	μC

Note 1) Repetivity rating : Pulse width limited by junction temperature.

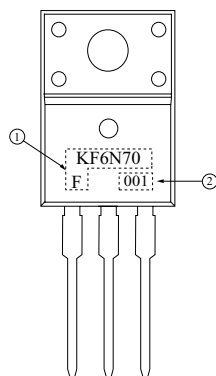
Note 2) $L=8.4mH$, $I_S=6A$, $V_{DD}=50V$, $R_G=25\Omega$, Starting $T_j=25^\circ C$.

Note 3) $I_S \leq 6A$, $dI/dt \leq 100A/\mu s$, $V_{DD} \leq BV_{DSS}$, Starting $T_j=25^\circ C$.

Note 4) Pulse Test : Pulse width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.

Note 5) Essentially independent of operating temperature.

Marking



- ① PRODUCT NAME
② LOT NO

Fig 1. $I_D - V_{DS}$

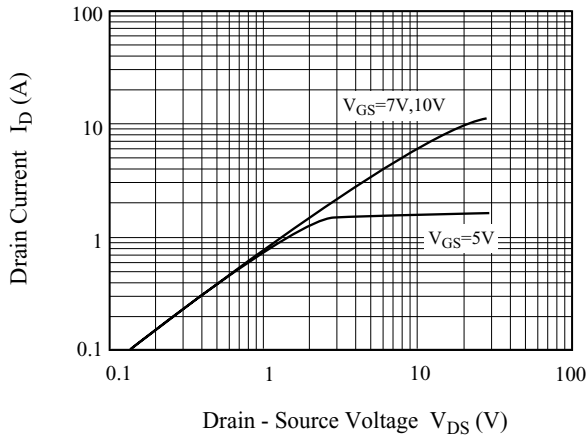


Fig 2. $I_D - V_{GS}$

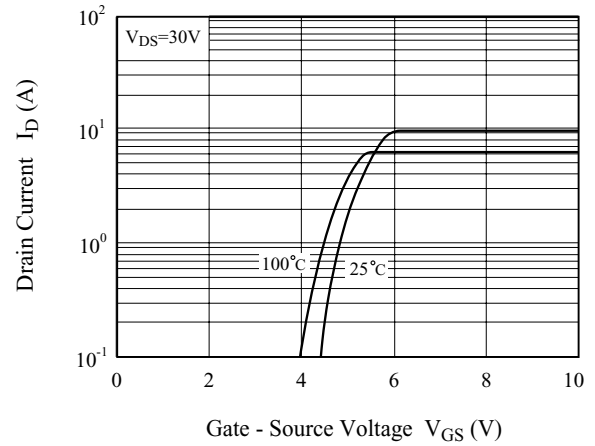


Fig 3. $BV_{DSS} - T_j$

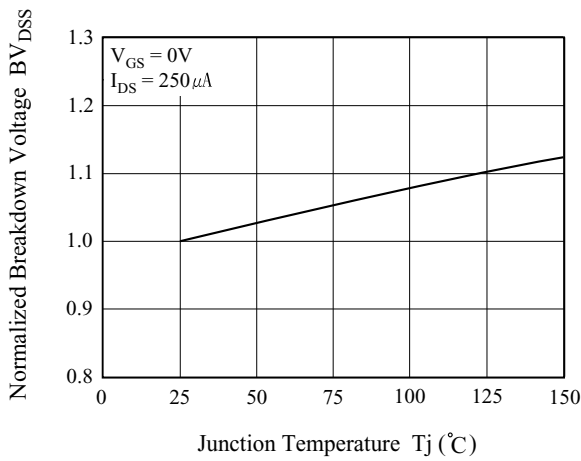


Fig 4. $R_{DS(ON)} - I_D$

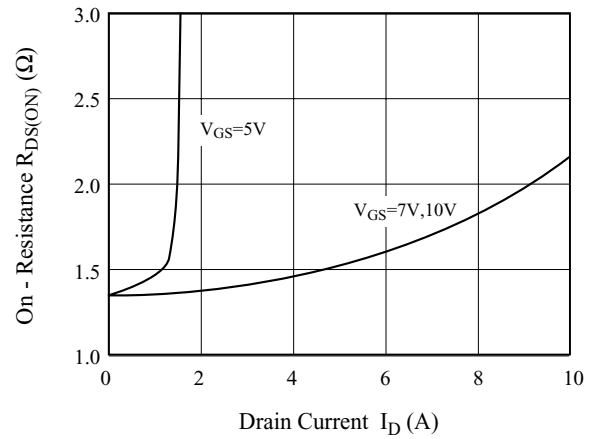


Fig 5. $I_S - V_{SD}$

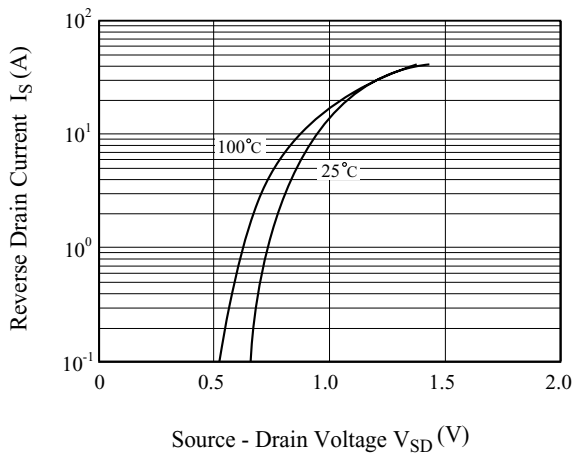
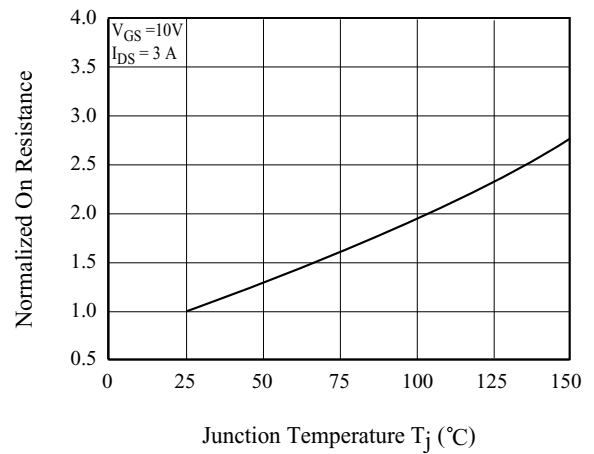


Fig 6. $R_{DS(ON)} - T_j$



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Fig 7. C - V_{DS}

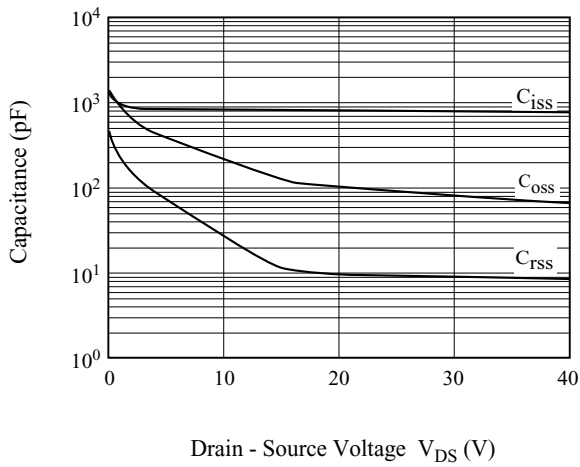


Fig 8. Q_g - V_{GS}

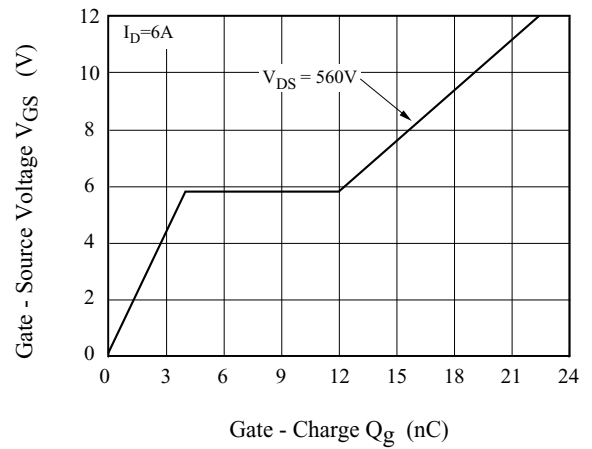


Fig 9. Safe Operation Area

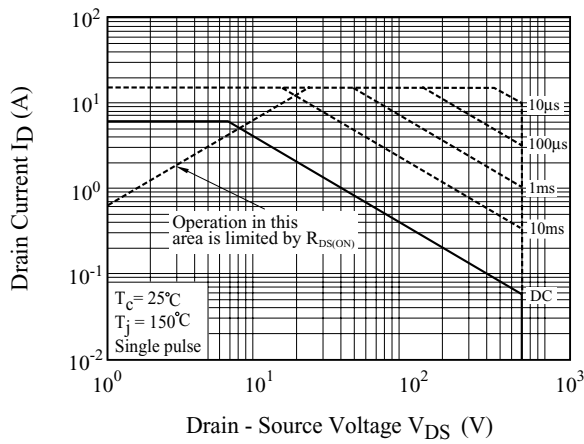


Fig 10. Transient Thermal Response Curve

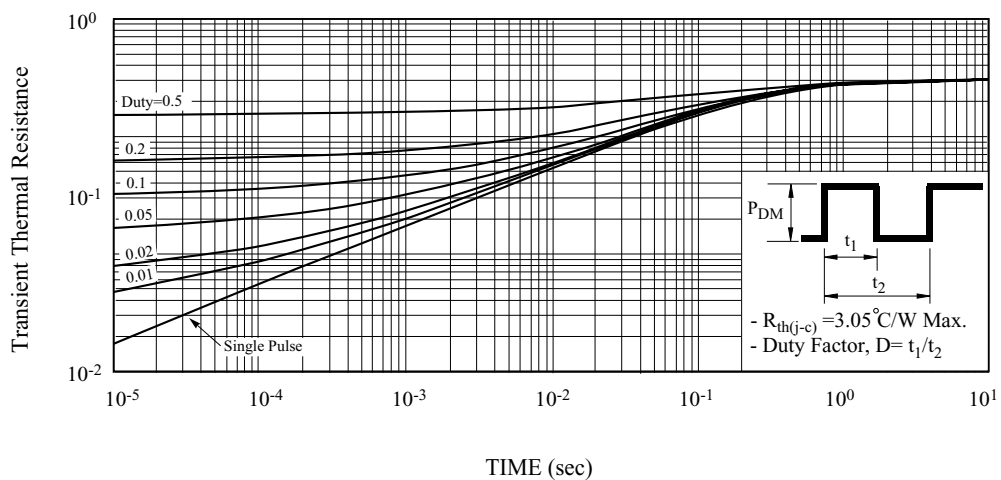


Fig 11. Gate Charge

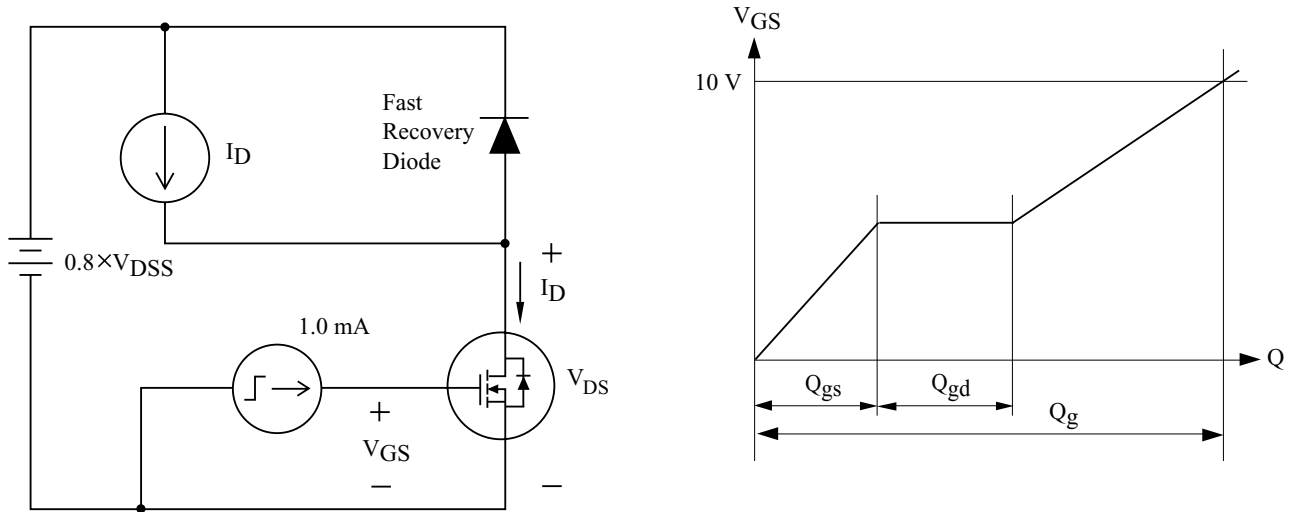


Fig 12. Single Pulsed Avalanche Energy

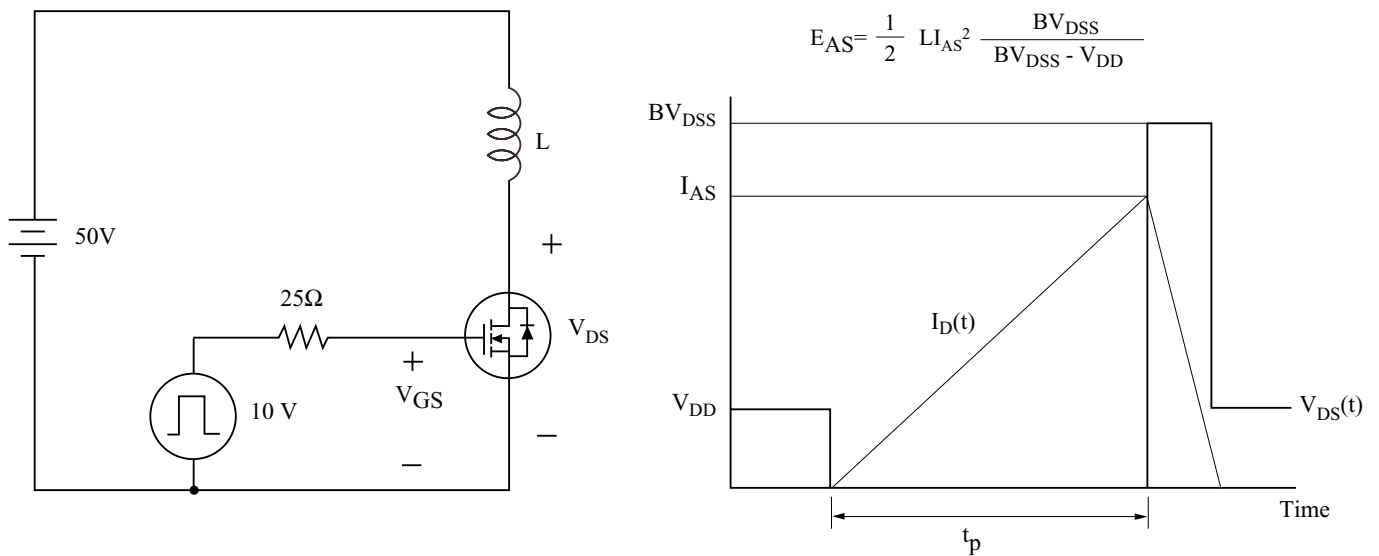


Fig 13. Resistive Load Switching

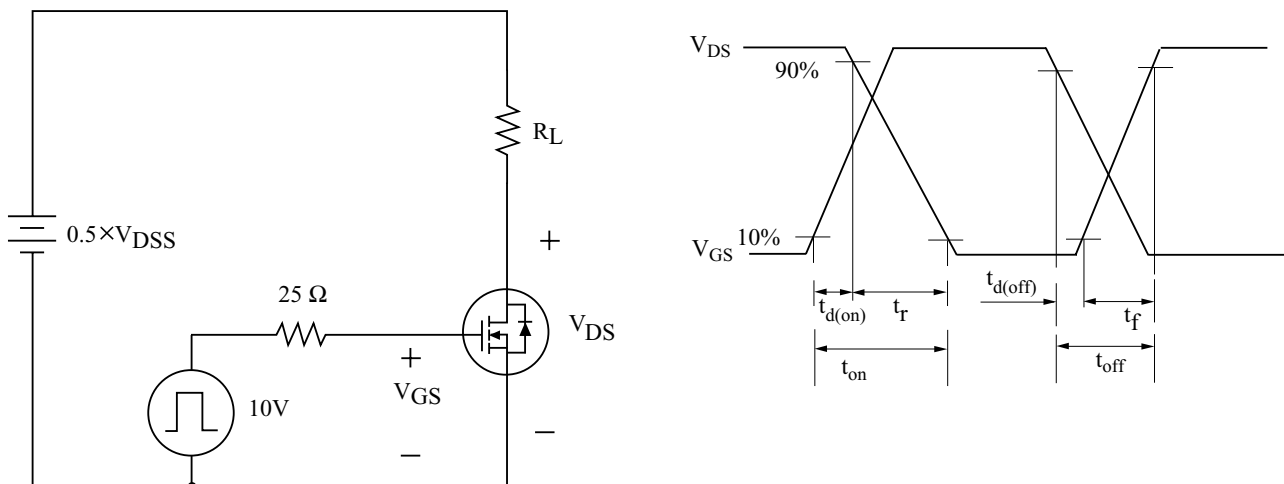


Fig 14. Source - Drain Diode Reverse Recovery and dv/dt

