

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 electronic ballast and switching mode power supplies.

FEATURES

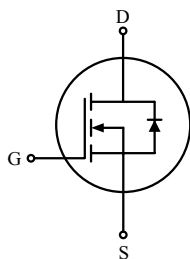
- $V_{DSS(Min.)} = 500V$, $I_D = 5.5A$
- $R_{DS(ON)} = 1.0 \Omega (Max)$ @ $V_{GS} = 10V$
- $Q_g(typ.) = 16nC$

MAXIMUM RATING (Tc=25 °C)

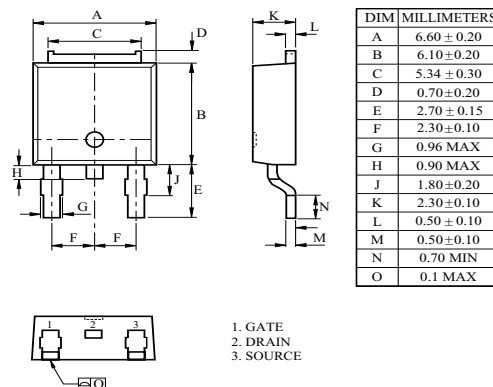
CHARACTERISTIC		SYMBOL	RATING	UNIT
			KF7N50D/I	
Drain-Source Voltage		V _{DSS}	500	V
Gate-Source Voltage		V _{GSS}	± 30	V
Drain Current	@T _C =25	I _D	5.5	A
	@T _C =100		3.5	
	Pulsed (Note1)	I _{DP}	21	
Single Pulsed Avalanche Energy (Note 2)		E _{AS}	180	mJ
Repetitive Avalanche Energy (Note 1)		E _{AR}	4	mJ
Peak Diode Recovery dv/dt (Note 3)		dv/dt	4.5	V/ns
Drain Power Dissipation	Tc=25	P _D	69.4	W
	Derate above25		0.56	W/
Maximum Junction Temperature		T _j	150	
Storage Temperature Range		T _{stg}	-55 150	
Thermal Characteristics				
Thermal Resistance, Junction-to-Case		R _{thJC}	1.8	/W
Thermal Resistance, Junction-to-Ambient		R _{thJA}	110	/W

* : Drain current limited by maximum junction temperature.

PIN CONNECTION

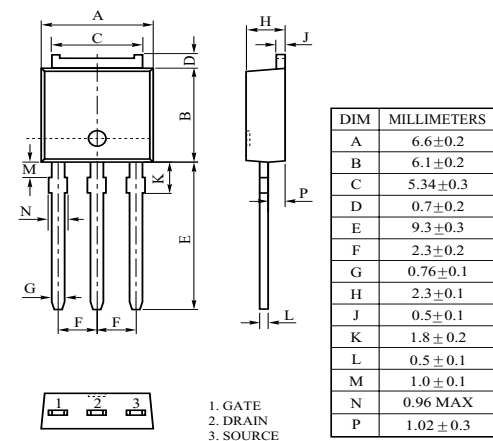


KF7N50D



DPAK (1)

KF7N50I



IPAK(1)

KF7N50D/I

ELECTRICAL CHARACTERISTICS (Tc=25)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Static						
Drain-Source Breakdown Voltage	BV _{DSS}	I _D =250 μA, V _{GS} =0V	500	-	-	V
Breakdown Voltage Temperature Coefficient	Δ BV _{DSS} / Δ T _j	I _D =250 μA, Referenced to 25	-	0.5	-	V/
Drain Cut-off Current	I _{DSS}	V _{DS} =500V, V _{GS} =0V,	-	-	10	μA
Gate Threshold Voltage	V _{th}	V _{DS} =V _{GS} , I _D =250 μA	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 =2.7A	-	0.83	1.0	Ω
Dynamic						
Total Gate Charge	Q _g	V _{DS} =400V, I _D =7A V _{GS} =10V (Note4,5)	-	16	-	nC
Gate-Source Charge	Q _{gs}		-	3.5	-	
Gate-Drain Charge	Q _{gd}		-	6.0	-	
Turn-on Delay time	t _{d(on)}	V _{DD} =200V, I _D =7A R _G =25 Ω (Note4,5) V _{GS} =10V	-	20	-	ns
Turn-on Rise time	t _r		-	25	-	
Turn-off Delay time	t _{d(off)}		-	50	-	
Turn-off Fall time	t _f		-	25	-	
Input Capacitance	C _{iss}	V _{DS} =25V, V _{GS} =0V, f=1.0MHz	-	710	-	pF
Output Capacitance	C _{oss}		-	95	-	
Reverse Transfer Capacitance	C _{rss}		-	8.5	-	
Source-Drain Diode Ratings						
Continuous Source Current	I _S	V _{GS} <V _{th}	-	-	7	A
Pulsed Source Current	I _{SP}		-	-	28	
Diode Forward Voltage	V _{SD}	I _S =5.5A, V _{GS} =0V	-	-	1.4	V
Reverse Recovery Time	t _{rr}	I _S =7A, V _{GS} =0V,	-	310	-	ns
Reverse Recovery Charge	Q _{rr}	dI _S /dt=100A/ μs	-	2.7	-	μC

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

Note 2) $L = 7.0mH$, $I_S=7A$, $V_{DD}=50V$, $R_G = 25\Omega$, Starting $T_j = 25$.

Note 3) $I_S \leq 7A$, $dI/dt \leq 100A/\mu s$, $V_{DD} \leq BV_{DSS}$, Starting $T_j = 25$.

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

Note 5) Essentially independent of operating temperature.

Marking

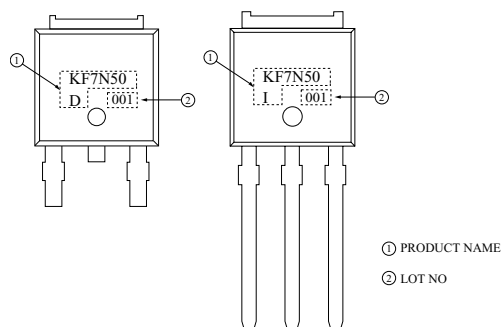


Fig1. $I_D - V_{DS}$

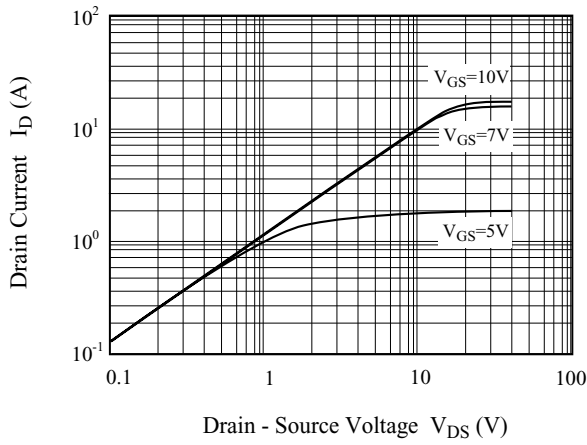


Fig2. $I_D - V_{GS}$

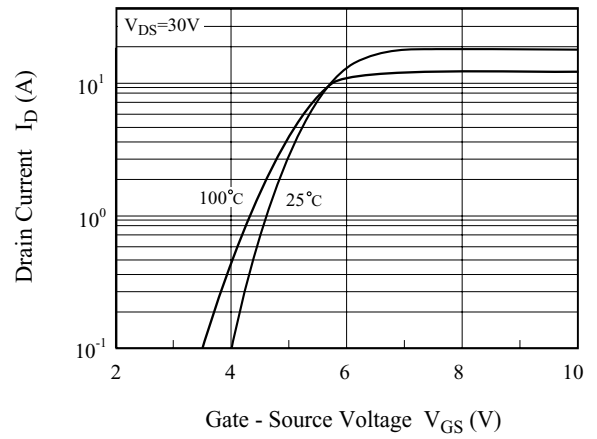


Fig3. $BV_{DSS} - T_j$

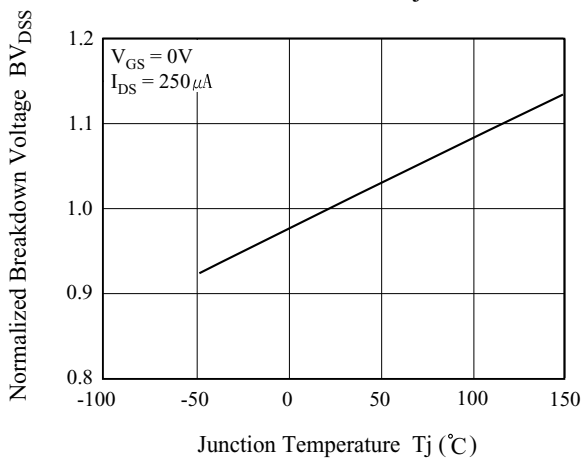


Fig4. $R_{DS(ON)} - I_D$

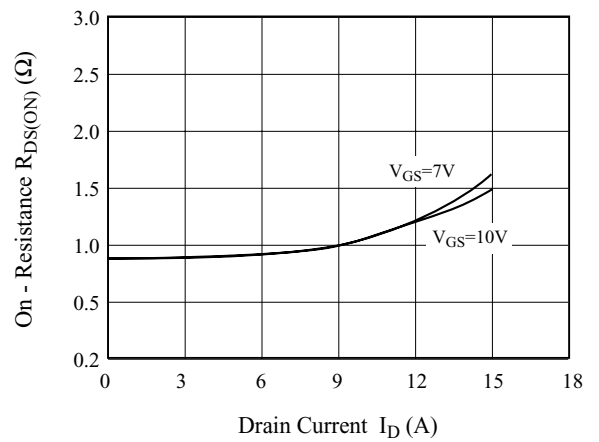


Fig5. $I_S - V_{SD}$

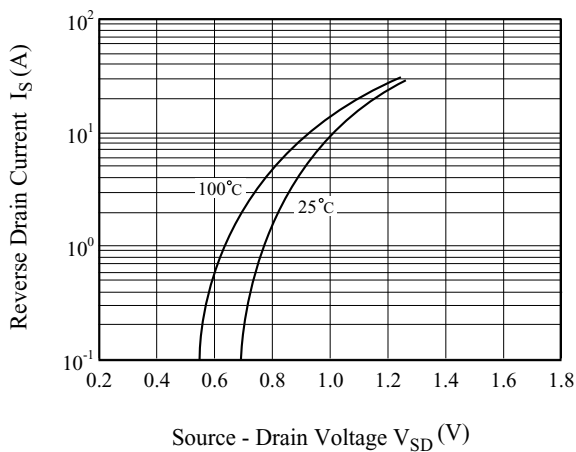


Fig6. $R_{DS(ON)} - T_j$

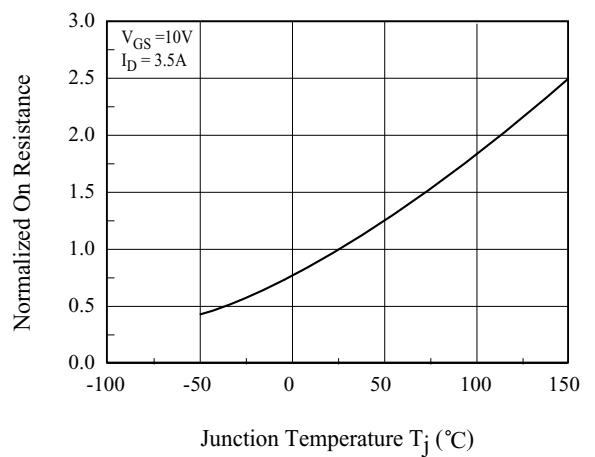


Fig 7. C - V_{DS}

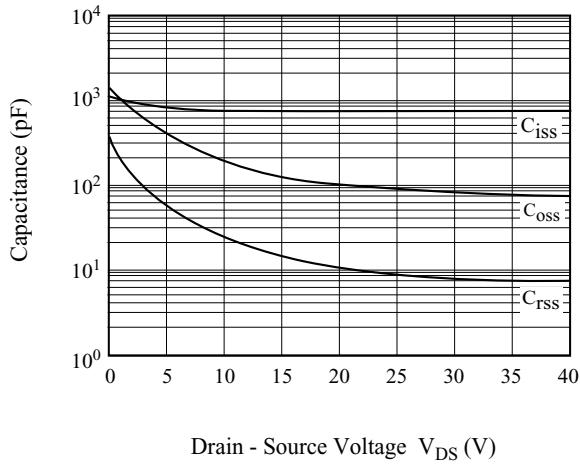


Fig8. Q_g - V_{GS}

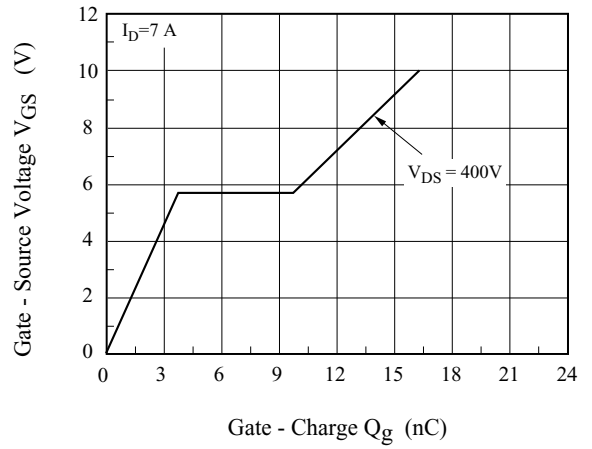


Fig9. Safe Operation Area

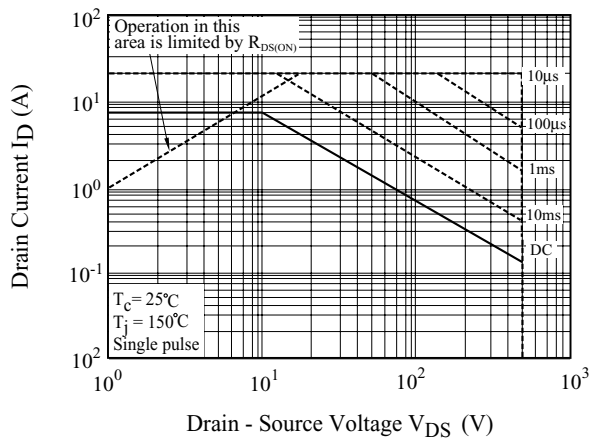


Fig10. I_D - T_j

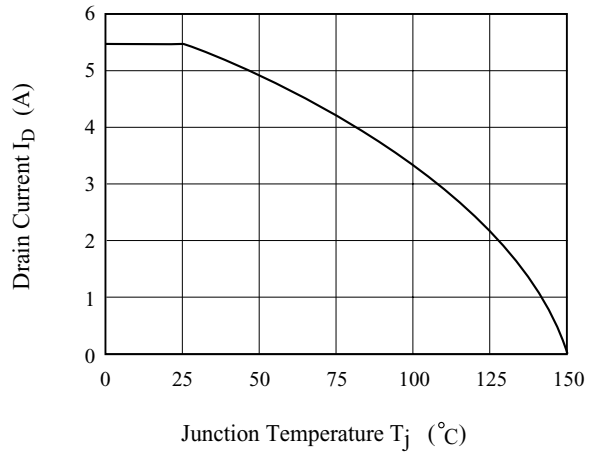


Fig11. Transient Thermal Response Curve

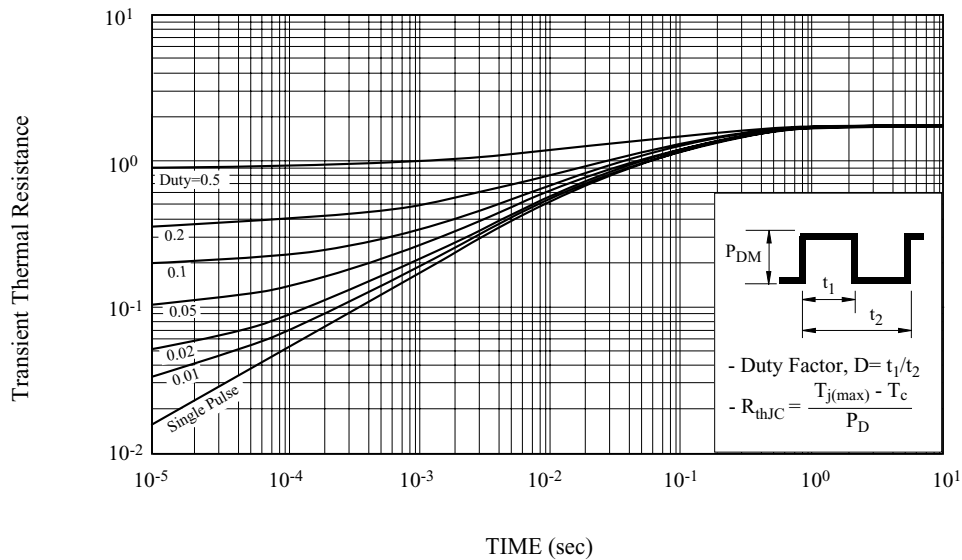


Fig12. Gate Charge

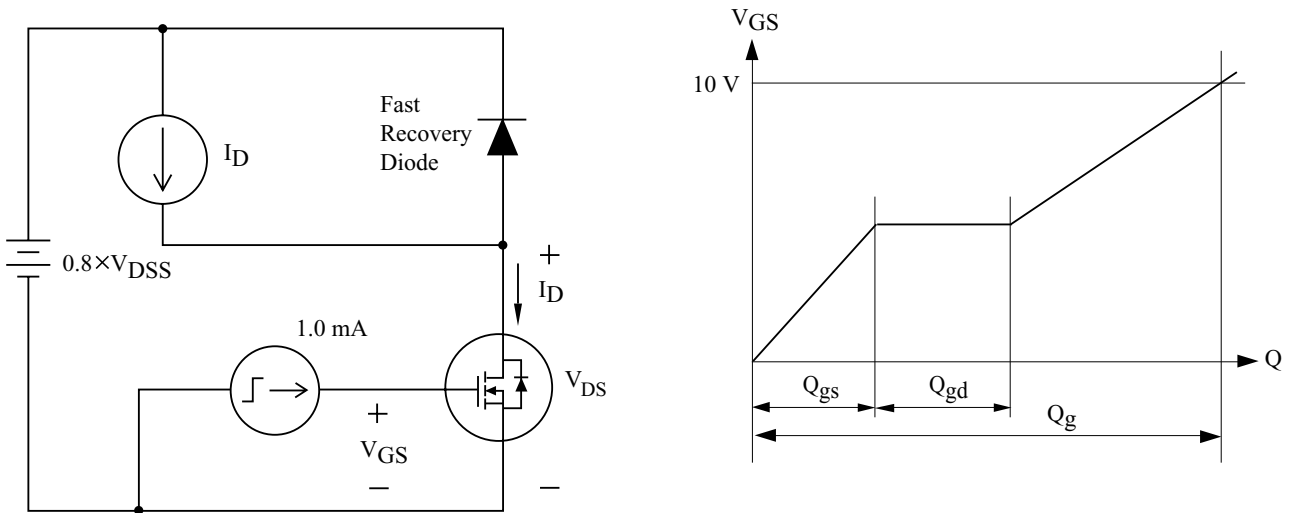


Fig13. Single Pulsed Avalanche Energy

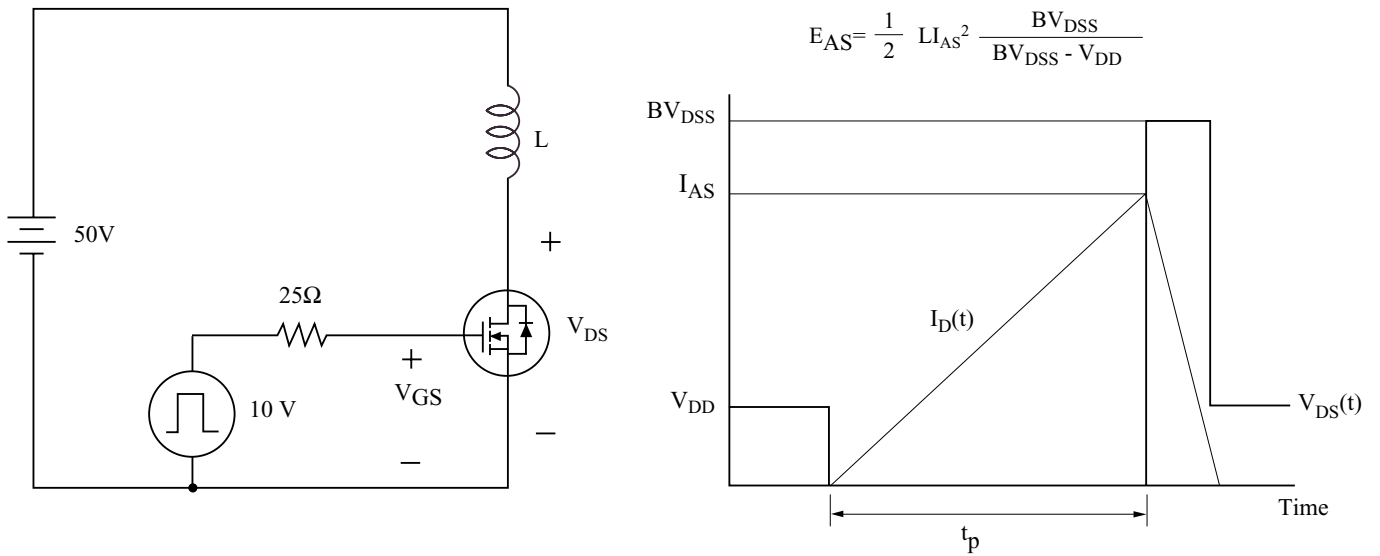


Fig14. Resistive Load Switching

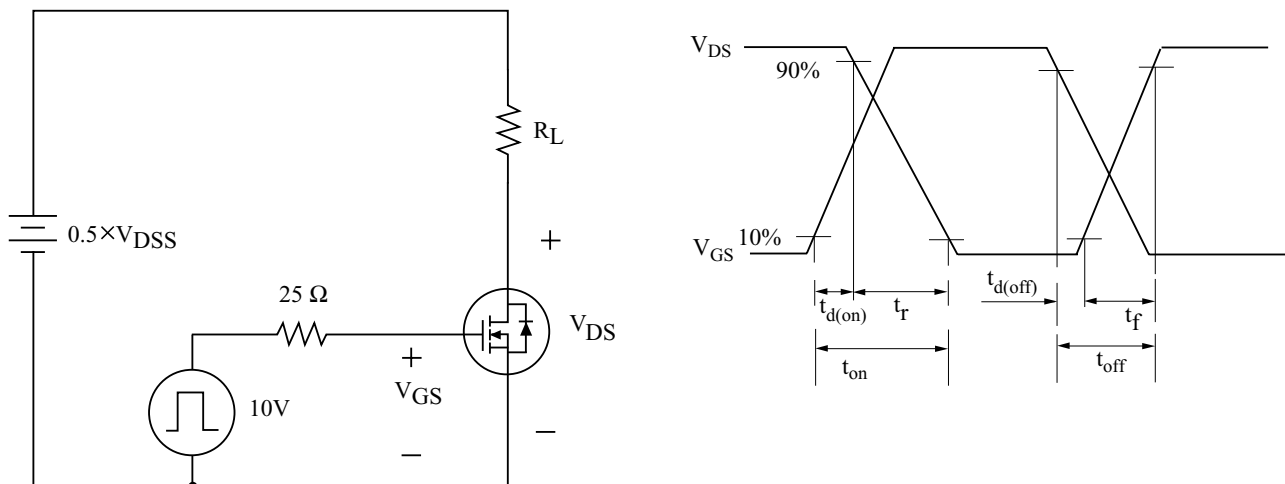


Fig15. Source - Drain Diode Reverse Recovery and dv/dt

