

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

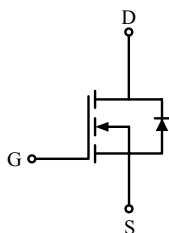
- $V_{DSS} = 600V$, $I_D = 2.3A$
- Drain-Source ON Resistance : $R_{DS(ON)} = 3.3\Omega$ @ $V_{GS} = 10V$
- $Q_g(\text{typ}) = 8.5nC$

MAXIMUM RATING (Ta=25°C)

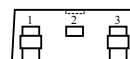
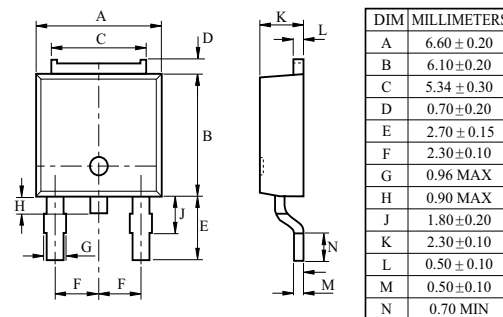
CHARACTERISTIC	SYMBOL	RATING	UNIT
Drain-Source Voltage	V_{DSS}	600	V
Gate-Source Voltage	V_{GSS}	± 30	V
Drain Current	@ $T_C = 25^\circ C$	I_D 2.3	A
	@ $T_C = 100^\circ C$	1.46	
	Pulsed (Note1)	I_{DP} 7*	
Single Pulsed Avalanche Energy (Note 2)	E_{AS}	120	mJ
Repetitive Avalanche Energy (Note 1)	E_{AR}	3.2	mJ
Peak Diode Recovery dv/dt (Note 3)	dv/dt	4.5	V/ns
Drain Power Dissipation	$T_C = 25^\circ C$	P_D 73	W
	Derate above 25°C	0.58	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}	2.8	°C/W
Thermal Resistance, Junction-to-Ambient	R_{thJA}	62.5	°C/W

* : Drain current limited by maximum junction temperature.

PIN CONNECTION



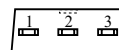
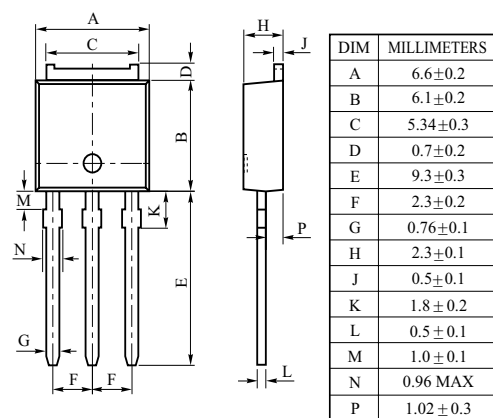
KF3N60D



1. GATE
2. DRAIN
3. SOURCE

DPAK (1)

KF3N60I



1. GATE
2. DRAIN
3. SOURCE

IPAK(1)

KF3N60D/I

ELECTRICAL CHARACTERISTICS (Ta=25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Static						
Drain-Source Breakdown Voltage	BV _{DSS}	I _D =250μA , V _{GS} =0V	600	-	-	V
Breakdown Voltage Temperature Coefficient	Δ BV _{DSS} / Δ T _j	I _D =250μA, Referenced to 25°C	-	0.61	-	V/°C
Drain Cut-off Current	I _{DSS}	V _{DS} =600V, 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 =1.15A	-	2.8	3.3	Ω
Dynamic						
Total Gate Charge	Q _g	V _{DS} =480V, I _D =3A V _{GS} =10V (Note4,5)	-	8.5	-	nC
Gate-Source Charge	Q _{gs}		-	1.8	-	
Gate-Drain Charge	Q _{gd}		-	3.6	-	
Turn-on Delay time	t _{d(on)}	V _{DD} =300V I _D =3A R _G =25Ω (Note4,5)	-	25	-	ns
Turn-on Rise time	t _r		-	25	-	
Turn-off Delay time	t _{d(off)}		-	40	-	
Turn-off Fall time	t _f		-	20	-	
Input Capacitance	C _{iss}	V _{DS} =25V, V _{GS} =0V, f=1.0MHz	-	355	-	pF
Output Capacitance	C _{oss}		-	45	-	
Reverse Transfer Capacitance	C _{rss}		-	4.4	-	
Source-Drain Diode Ratings						
Continuous Source Current	I _S	V _{GS} <V _{th}	-	-	3	A
Pulsed Source Current	I _{SP}		-	-	12	
Diode Forward Voltage	V _{SD}	I _S =2.3A, V _{GS} =0V	-	-	1.4	V
Reverse Recovery Time	t _{rr}	I _S =3A, V _{GS} =0V,	-	300	-	ns
Reverse Recovery Charge	Q _{rr}	dIs/dt=100A/μs	-	1.5	-	μC

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

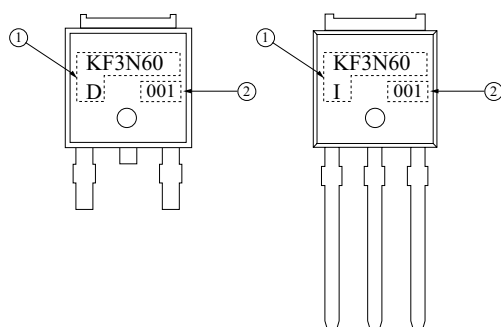
Note 2) $L=24.5mH$, $I_S=3A$, $V_{DD}=50V$, $R_G=25\Omega$, Starting $T_j=25^\circ C$.

Note 3) $I_S \leq 3A$, $dI/dt \leq 100A/\mu s$, $V_{DD} \leq BV_{DSS}$, 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

Fig1. $I_D - V_{DS}$

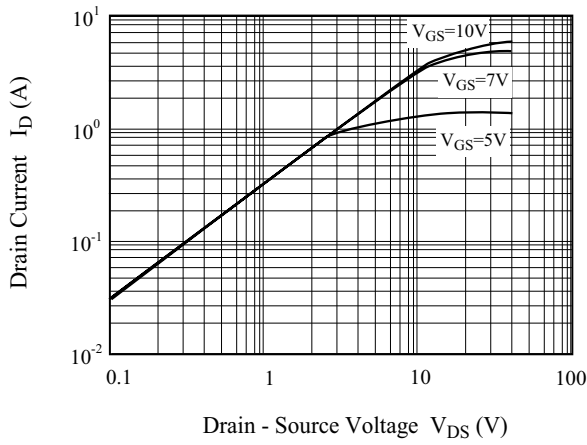


Fig2. $I_D - V_{GS}$

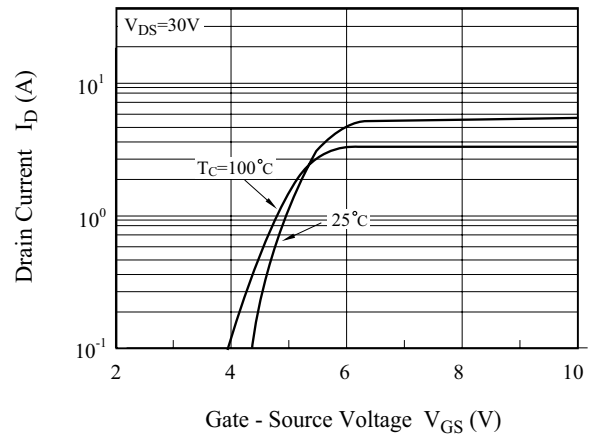


Fig3. $BV_{DSS} - T_j$

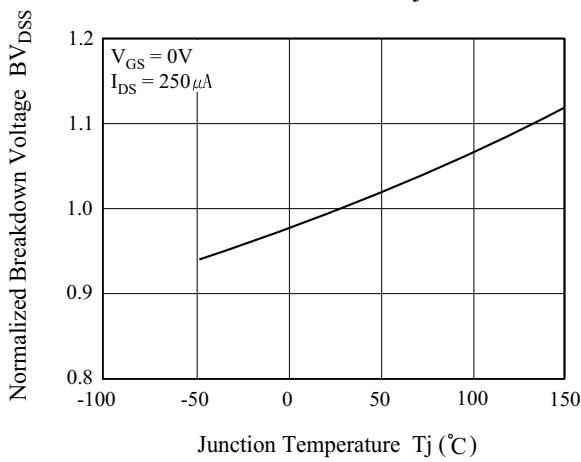


Fig4. $R_{DS(ON)} - I_D$

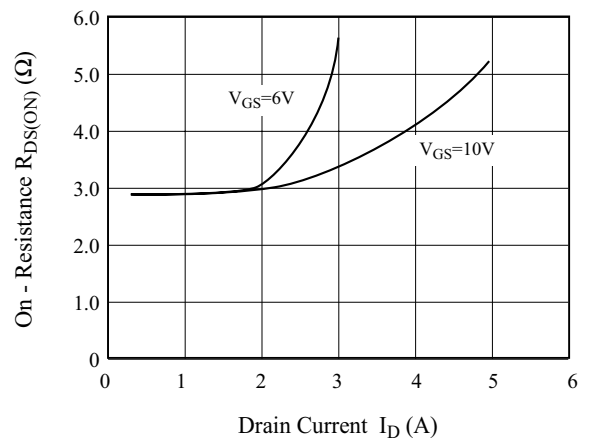


Fig5. $I_S - V_{SD}$

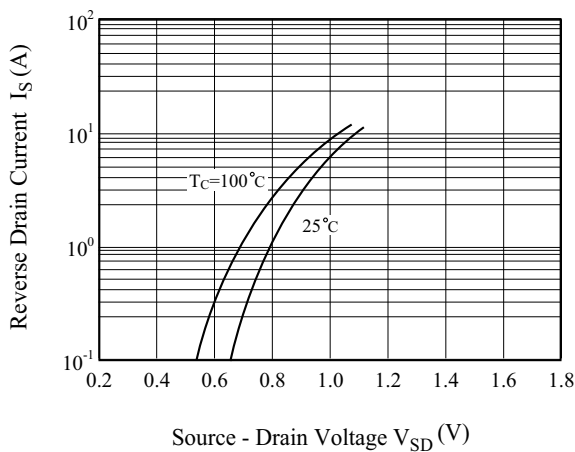
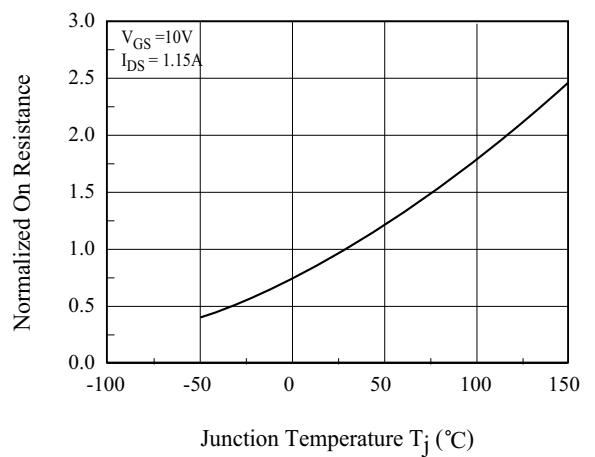


Fig6. $R_{DS(ON)} - T_j$



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Fig 7. C - V_{DS}

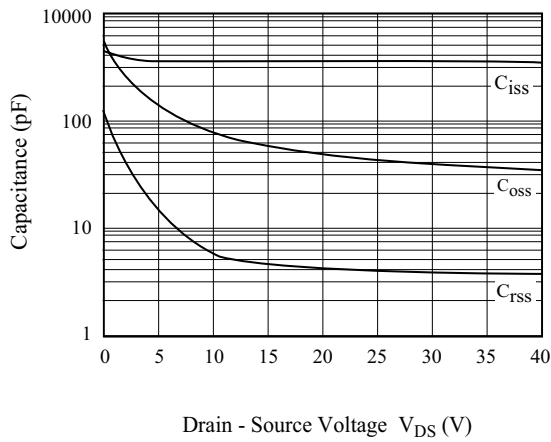


Fig8. Q_g - V_{GS}

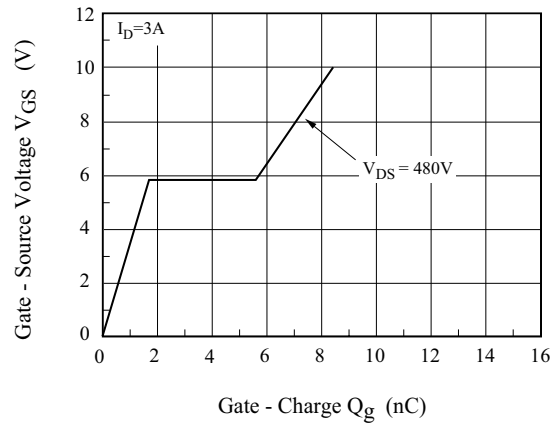


Fig9. Safe Operation Area

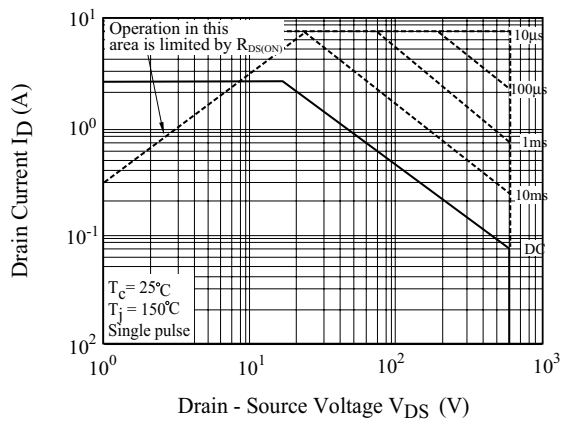


Fig10. I_D - T_j

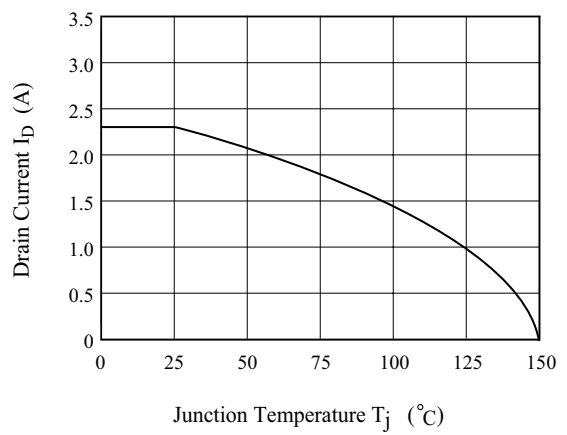


Fig11. Transient Thermal Response Curve

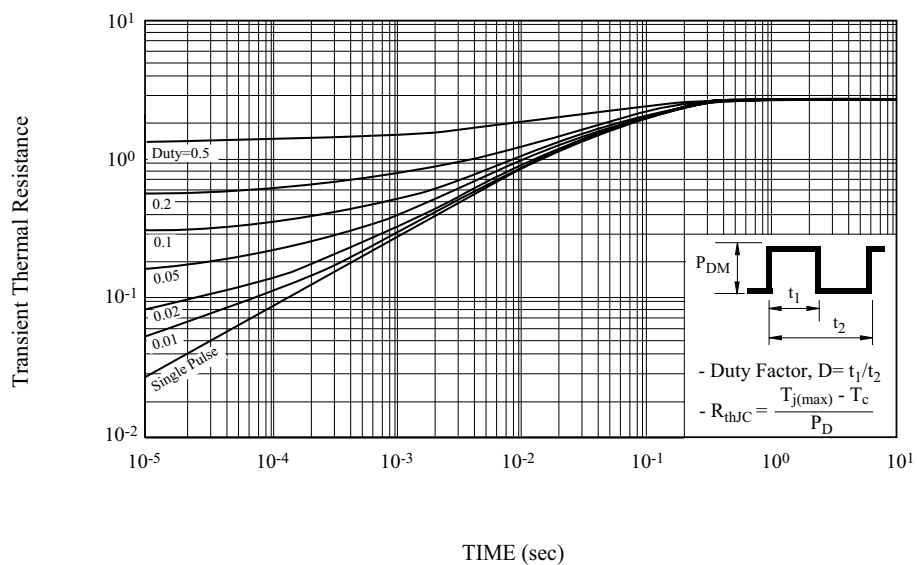


Fig12. Gate Charge

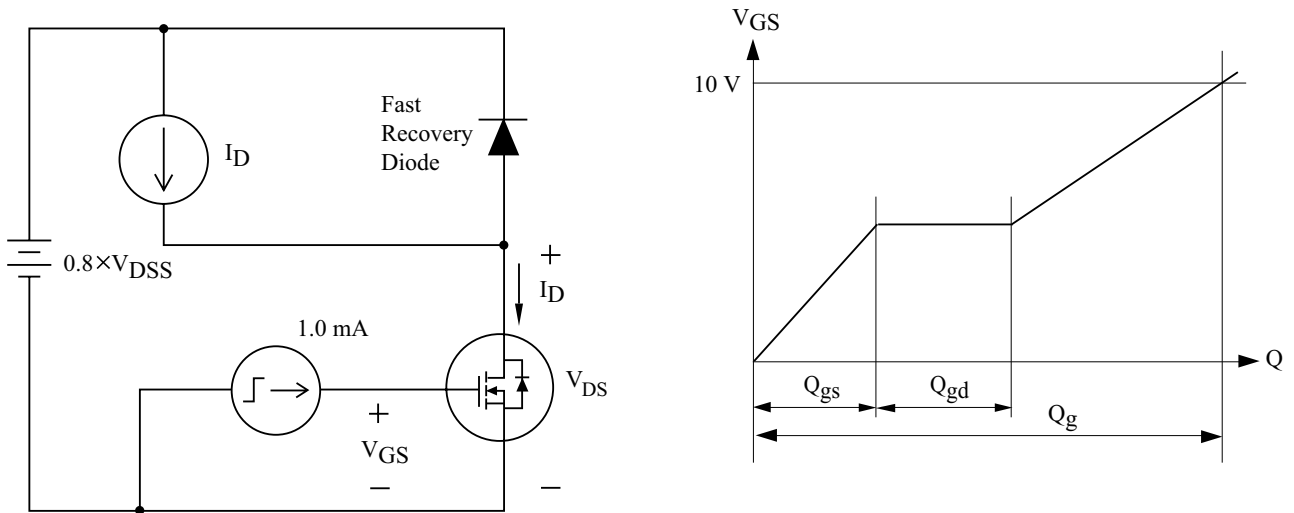


Fig13. Single Pulsed Avalanche Energy

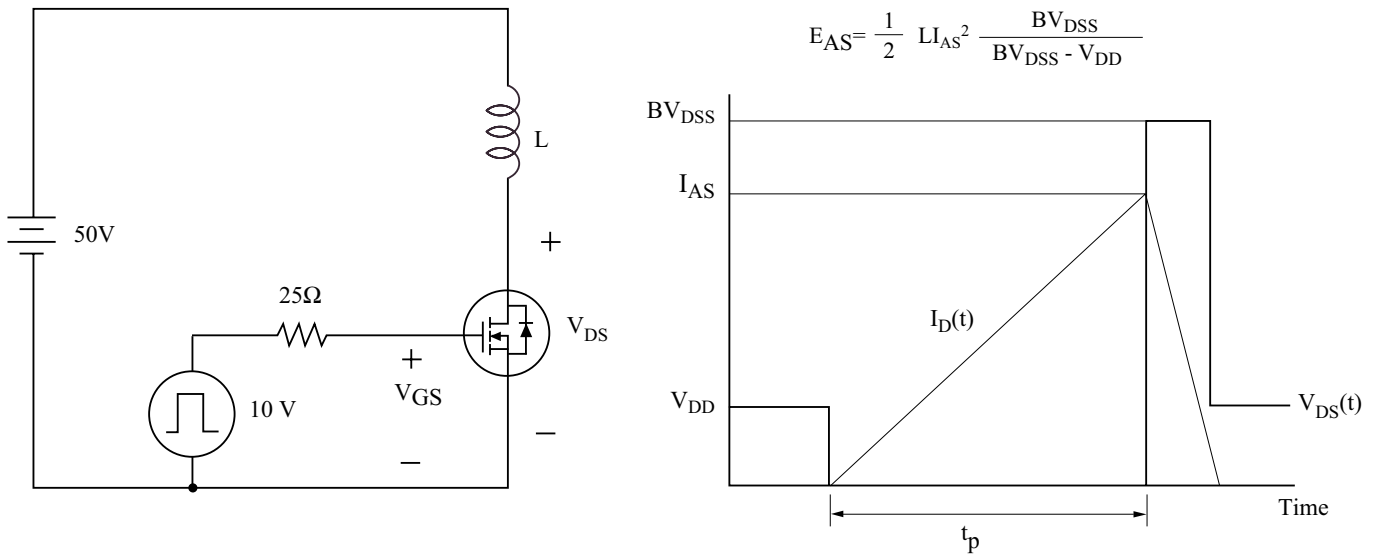


Fig14. Resistive Load Switching

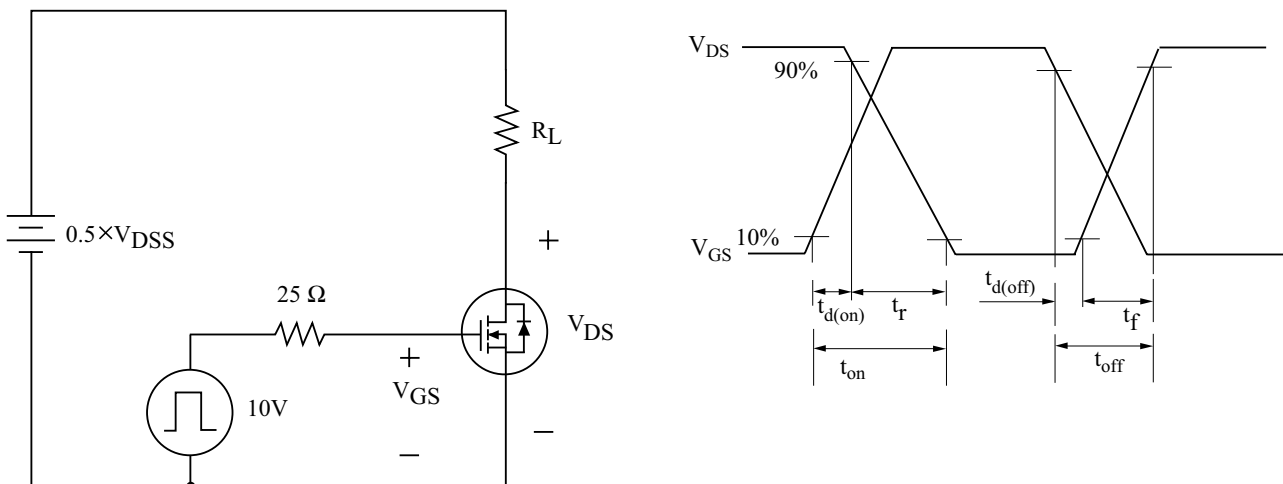


Fig15. Source - Drain Diode Reverse Recovery and dv/dt

