

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 DC/DC Converters and switching mode power supplies.

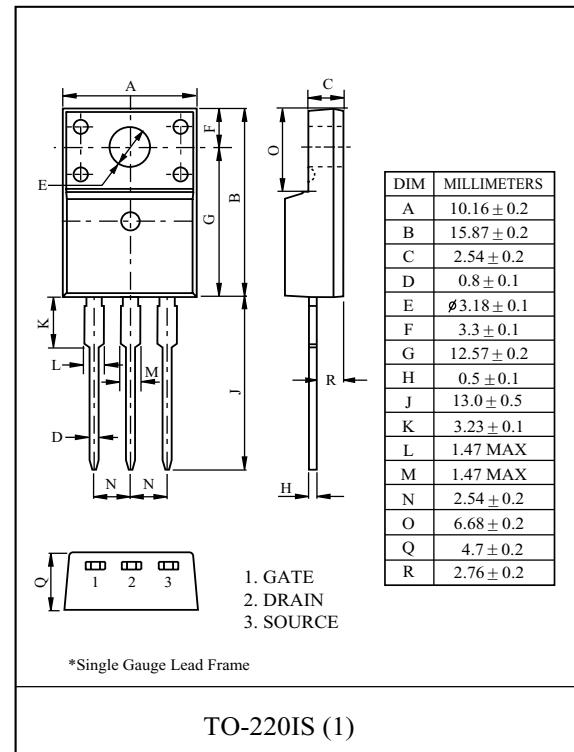
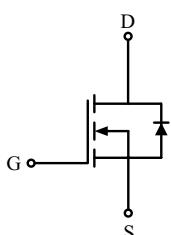
FEATURES

- $V_{DSS} = 250V$, $I_D = 16A$
- Drain-Source ON Resistance : $R_{DS(ON)} = 0.24$ @ $V_{GS} = 10V$
- $Q_g(\text{typ}) = 21\text{nC}$

MAXIMUM RATING (Ta=25)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Drain-Source Voltage	V_{DSS}	250	V
Gate-Source Voltage	V_{GSS}	± 30	V
Drain Current	I_D	16*	A
		10*	
	I_{DP}	39*	
Single Pulsed Avalanche Energy (Note 2)	E_{AS}	200	mJ
Repetitive Avalanche Energy (Note 1)	E_{AR}	4.7	mJ
Peak Diode Recovery dv/dt (Note 3)	dv/dt	4.5	V/ns
Drain Power Dissipation	P_D	41.7	W
		0.33	W/
Maximum Junction Temperature	T_j	150	
Storage Temperature Range	T_{stg}	-55 150	
Thermal Characteristics			
Thermal Resistance, Junction-to-Case	R_{thJC}	3.0	/W
Thermal Resistance, Junction-to-Ambient	R_{thJA}	110	/W

* : Drain Current limited by maximum junction temperature.

**PIN CONNECTION**

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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	250	-	-	V
Breakdown Voltage Temperature Coefficient	BV _{DSS} / T _j	I _D =250μA, Referenced to 25	-	0.29	-	V/°C
Drain Cut-off Current	I _{DSS}	V _{DS} =250V, V _{GS} =0V,	-	-	10	μA
Gate Threshold Voltage	V _{th}	V _{DS} =V _{GS} , I _D =250μA	2.0	-	4.0	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 =8A	-	0.2	0.24	
Dynamic						
Total Gate Charge	Q _g	V _{DS} =200V, I _D =16A V _{GS} =10V (Note 4,5)	-	21	-	nC
Gate-Source Charge	Q _{gs}		-	5	-	
Gate-Drain Charge	Q _{gd}		-	8	-	
Turn-on Delay time	t _{d(on)}	V _{DD} =125V I _D =16A R _G =25 (Note 4,5)	-	23	-	ns
Turn-on Rise time	t _r		-	19	-	
Turn-off Delay time	t _{d(off)}		-	57	-	
Turn-off Fall time	t _f		-	22	-	
Input Capacitance	C _{iss}	V _{DS} =25V, V _{GS} =0V, f=1.0MHz	-	930	-	pF
Output Capacitance	C _{oss}		-	140	-	
Reverse Transfer Capacitance	C _{rss}		-	16	-	
Source-Drain Diode Ratings						
Continuous Source Current	I _S	V _{GS} <V _{th}	-	-	13	A
Pulsed Source Current	I _{SP}		-	-	39	
Diode Forward Voltage	V _{SD}	I _S =16A, V _{GS} =0V	-	-	1.4	V
Reverse Recovery Time	t _{rr}	I _S =16A, V _{GS} =0V, dI _S /dt=100A/μs	-	170	-	ns
Reverse Recovery Charge	Q _{rr}		-	1.15	-	μC

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

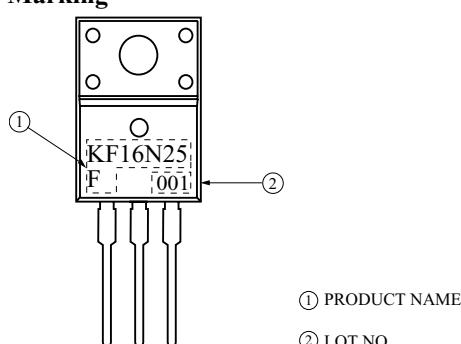
Note 2) L=1.07mH, I_S=16A, V_{DD}=50V, R_G=25Ω, Starting T_j=25°C.

Note 3) I_S=16A, dI/dt=100A/μs, V_{DD}=BV_{DSS}, Starting T_j=25°C.

Note 4) Pulse Test : Pulse width 300μs, Duty Cycle 2%.

Note 5) Essentially independent of operating temperature.

Marking



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Fig1. I_D - V_{DS}

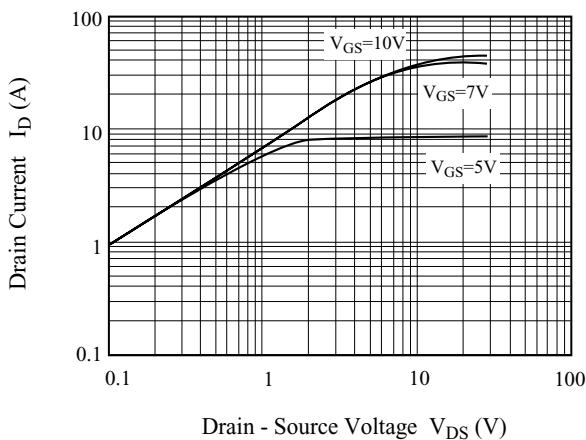


Fig2. I_D - V_{GS}

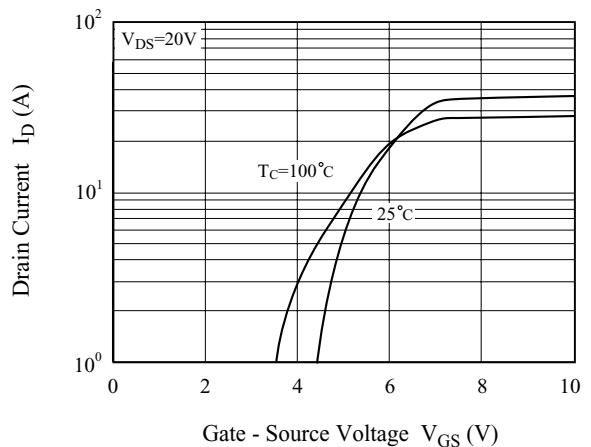


Fig3. BV_{DSS} - T_j

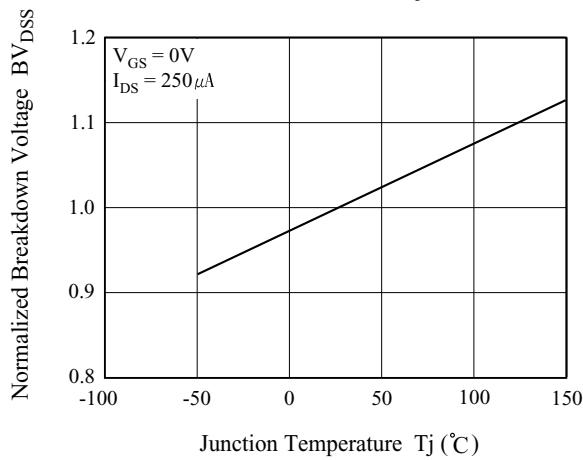


Fig4. $R_{DS(\text{ON})}$ - I_D

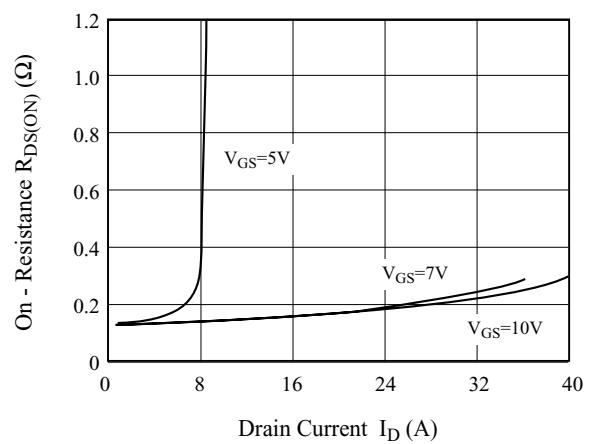


Fig5. I_S - V_{SD}

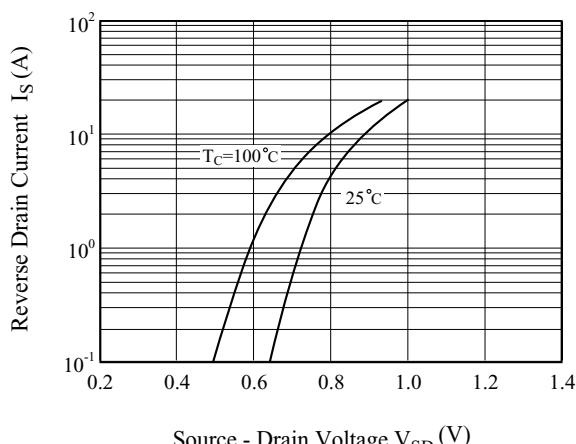
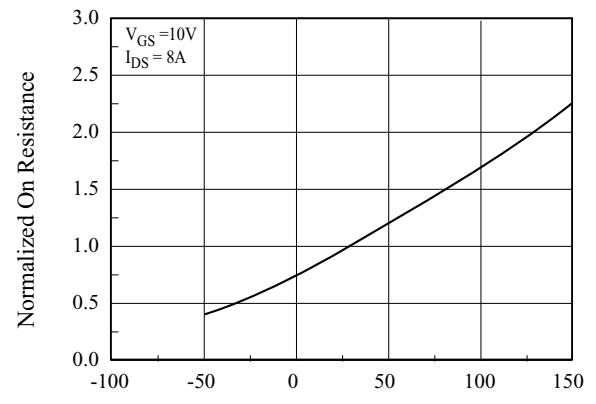


Fig6. $R_{DS(\text{ON})}$ - T_j



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Fig 7. C - V_{DS}

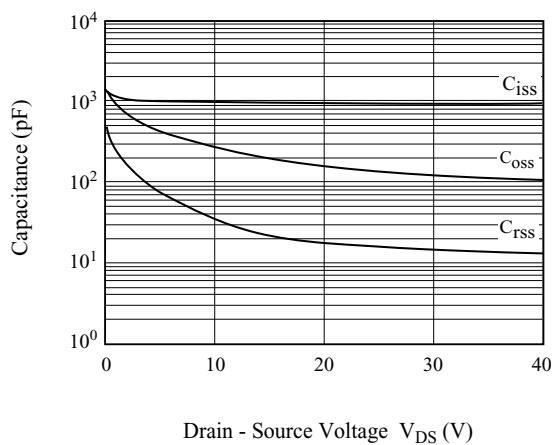


Fig8. Q_g- V_{GS}

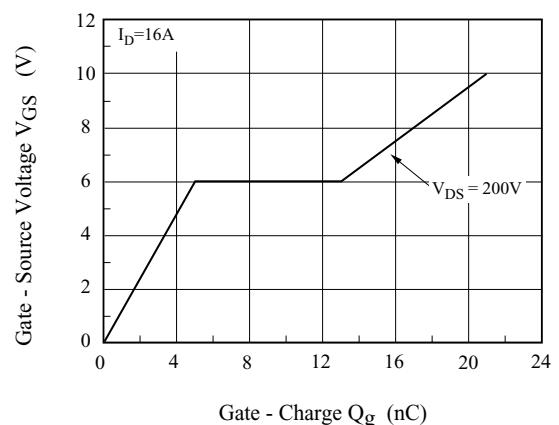


Fig9. Safe Operation Area

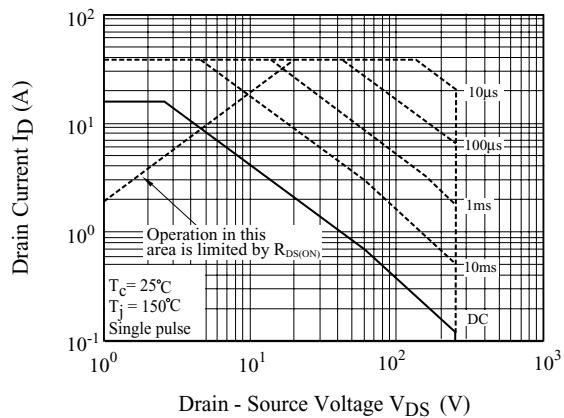
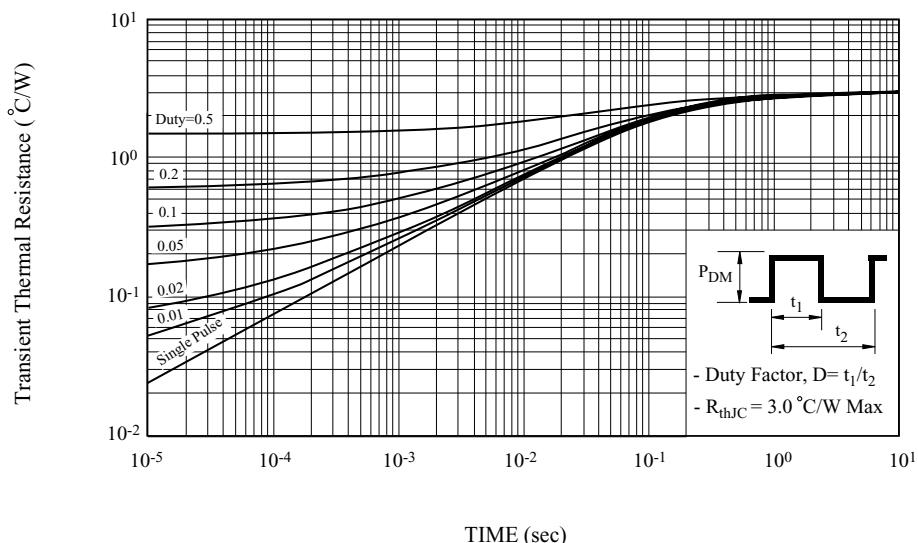


Fig10. Transient Thermal Response Curve



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Fig11. Gate Charge

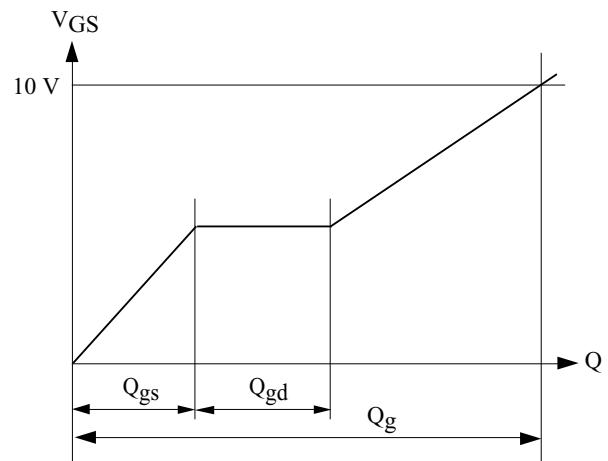
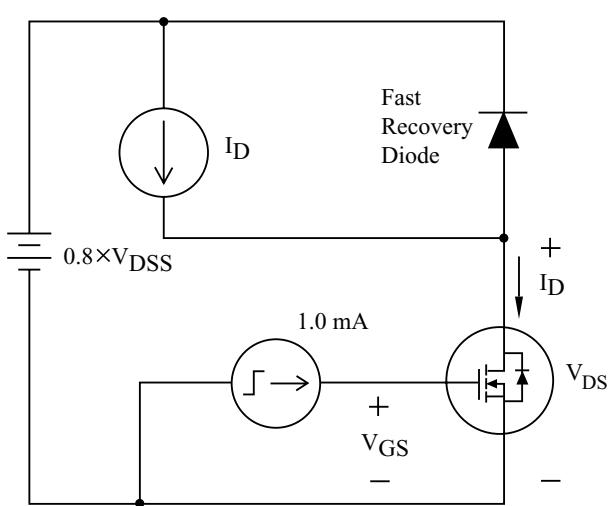


Fig12. Single Pulsed Avalanche Energy

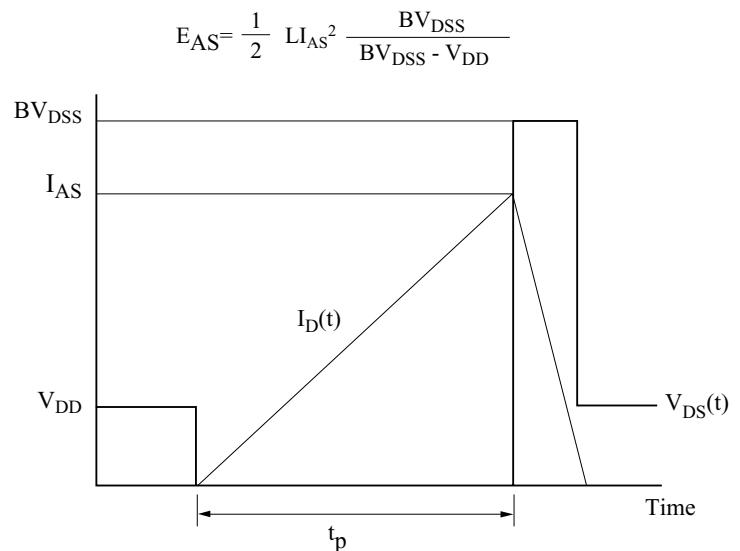
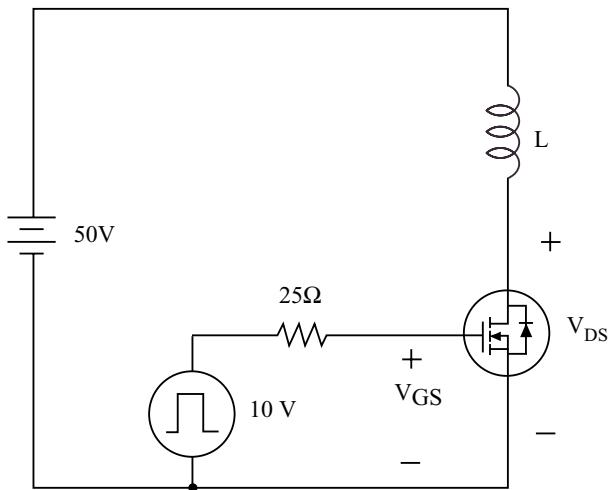
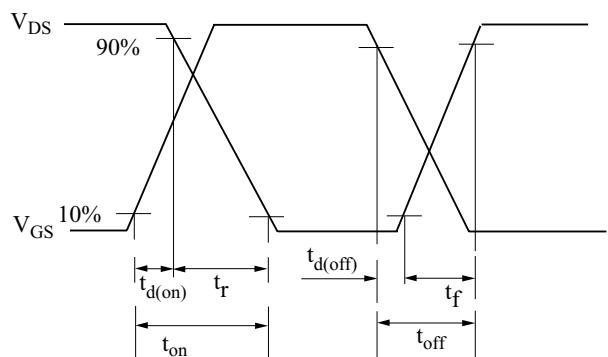
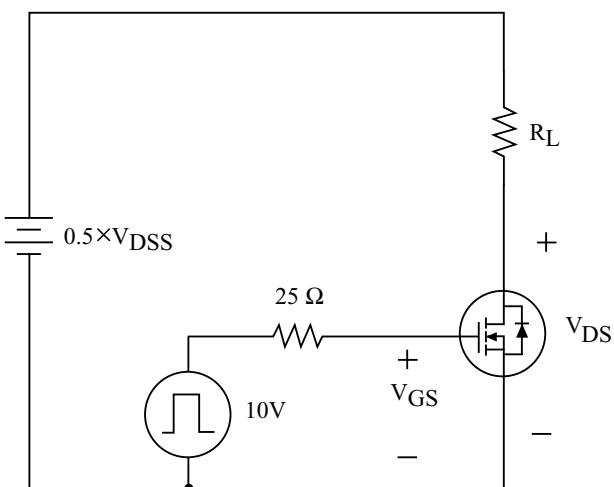


Fig13. Resistive Load Switching



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Fig14. Source - Drain Diode Reverse Recovery and dv /dt

