

N-Ch MOSFET

KF500KN60SP2Z

This planar MOSFET has better characteristics, Such as low threshold voltage, low gate charge and ESD Protected characteristics.

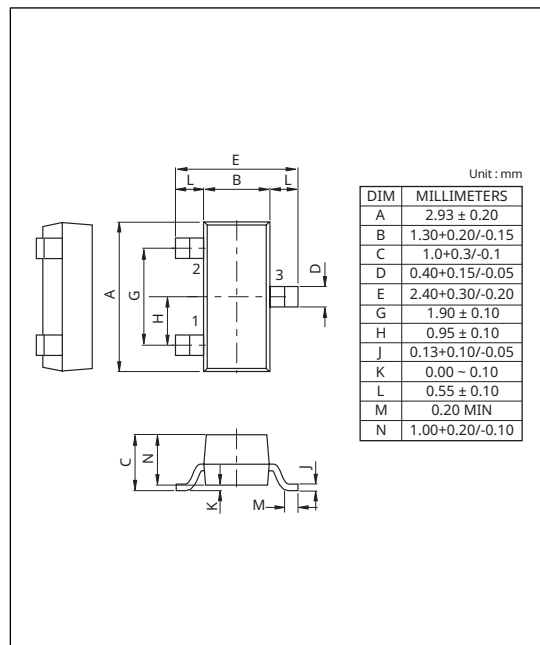
FEATURES

- $V_{DS} = 600V$, $I_D = 0.021A$
- Drain-Source ON Resistance:
 $R_{DS(ON)}(Max) = 500\Omega @ V_{GS} = 10V$
- $Q_g(typ.) = 1.3nC @ V_{GS} = 10V$

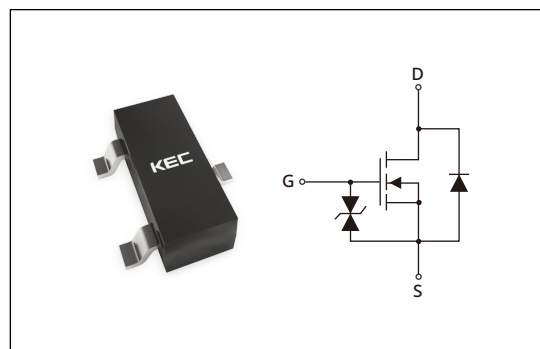
APPLICATION

- Small Signal Switch
- SMPS Start-up Circuit
- SMPS Secondary Stage Output Capacitance Discharge

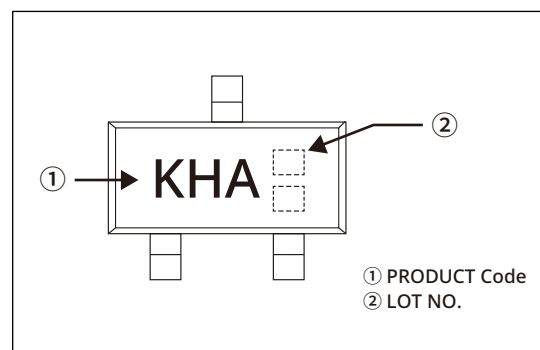
PACKAGE DIMENSION(SOT-23)



PIN CONFIGURATION



MARKING CODE



PRODUCT DATASHEET

N-Ch MOSFET - KF500KN60SP2Z

MAXIMUM RATING (T_J=25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Drain-Source Voltage		V _{DSS}	600	V
Gate-Source Voltage		V _{GSS}	±20	V
Drain Current	@T _C =25°C	I _D	0.021	A
	@T _C =100°C	I _D	0.013	
	Pulsed (Note 1)	I _{DP}	0.08*	
Peak Diode Recovery dv/dt (Note 4)		dv/dt	6	V/ns
Drain Power Dissipation	T _A =25°C	P _D	0.5	W
Maximum Junction Temperature		T _J	150	°C
Operation and Storage Temperature Range		T _{opr} , T _{stg}	-55 ~ 150	°C
Thermal Characteristics				
Thermal Resistance, Junction-to-Ambient	(Note 5)	R _{thJA}	250	°C/W

* : Drain current limited by maximum junction temperature

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ELECTRICAL CHARACTERISTICS(T_J= 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	BV _{DSS} /ΔT _J	I _D =250μA, Referenced to 25°C	-	0.6	-	V/°C
Drain Cut-off Current	I _{DSS}	V _{DS} =600V, V _{GS} =0V	-	-	0.1	μA
Gate Threshold Voltage	V _{th}	V _{DS} =V _{GS} , I _D =8μA	1.4	2.0	2.6	V
Gate Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V	-	-	±10	μA
Drain-Source ON Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =0.016A	-	195	500	Ω
		V _{GS} =4.5V, I _D =0.016A	-	200	600	Ω
Dynamic						
Total Gate Charge	Q _g	V _{DD} =300V, I _D =0.01A, V _{GS} =10V (Note 2,3)	-	1.3	-	nC
Gate-Source Charge	Q _{gs}		-	0.03	-	
Gate-Drain Charge	Q _{gd}		-	0.90	-	
Turn-on Delay time	t _{d(on)}	V _{DD} =300V, I _D =0.01A, V _{GS} =10V, R _{G,ext} =6Ω (Note 2,3)	-	14	-	ns
Turn-on Rise time	t _r		-	50	-	
Turn-off Delay time	t _{d(off)}		-	140	-	
Turn-off Fall time	t _f		-	1900	-	
Input Capacitance	C _{iss}	V _{DS} =25V, V _{GS} =0V, f=1MHz	-	11.6	-	pF
Output Capacitance	C _{oss}		-	2.3	-	
Reverse Transfer Capacitance	C _{rss}		-	0.3	-	
Source-Drain Diode Ratings						
Continuous Source Current	I _S	V _{GS} < V _{th} , T _A =25°C	-	-	0.016	A
Pulsed Source Current	I _{SP}		-	-	0.08	
Diode Forward Voltage	V _{SD}	I _S =0.016A, V _{GS} =0V	-	-	1.2	V
Reverse Recovery Time	t _{rr}	I _S =0.016A, V _{GS} =0V, V _{DD} =300V dI _S /dt=50A/μs	-	800	-	ns
Reverse Recovery Charge	Q _{rr}		-	60	-	nC

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

Note 2) Pulse Test : Pulse width ≤ 100μs, Duty Cycle ≤ 2%.

Note 3) Essentially independent of operating temperature.

Note 4) I_D=0.016 A, V_{DS}=300V, dI_S/dt =50A/μs.

Note 5) Surface mounted on 19 x 16 x 0.6mm FR-4 board.

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Fig1. $I_D - V_{DS} - 1$

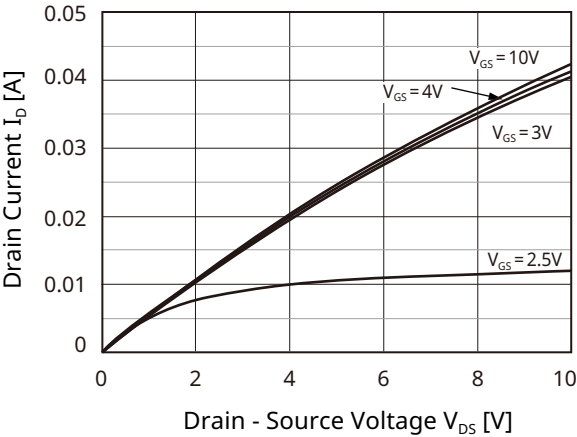


Fig2. $I_D - V_{DS} - 2$

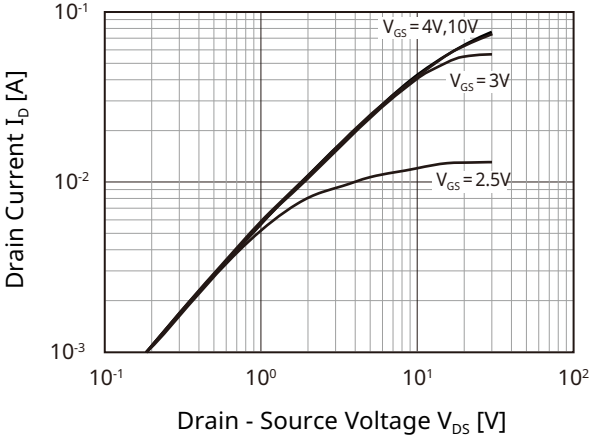


Fig3. $I_D - V_{GS}$

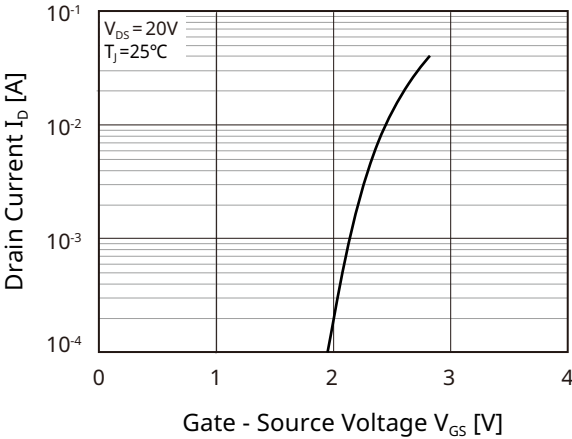


Fig4. $R_{DS(ON)} - I_D$

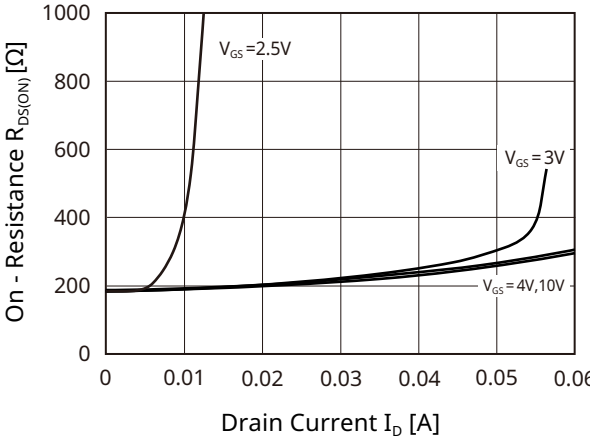


Fig5. $R_{DS(ON)} - T_J$

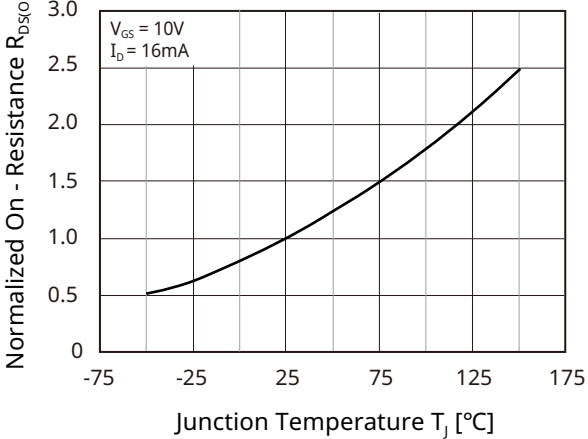
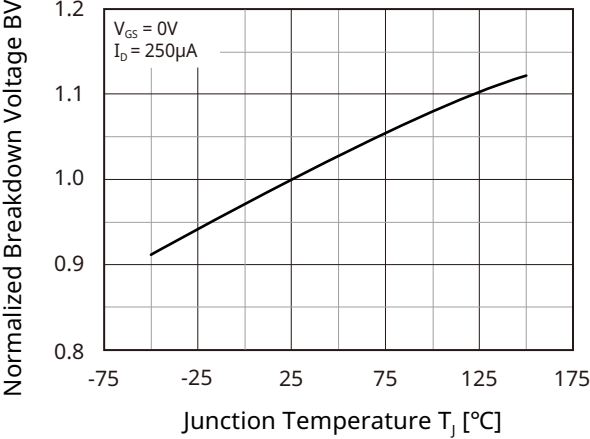
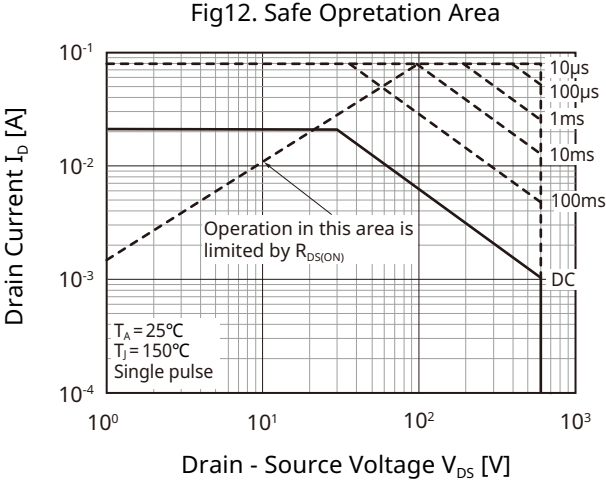
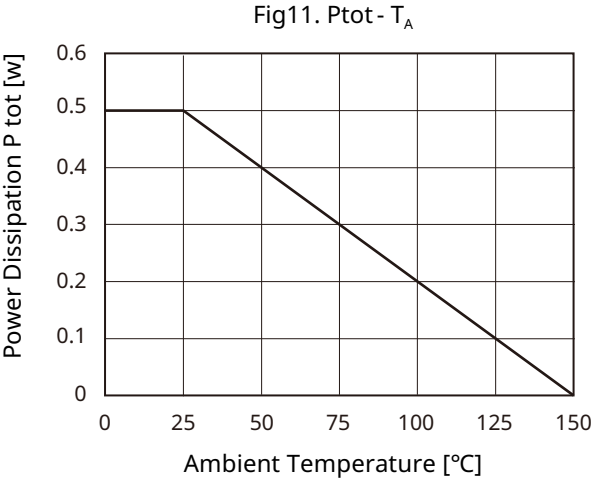
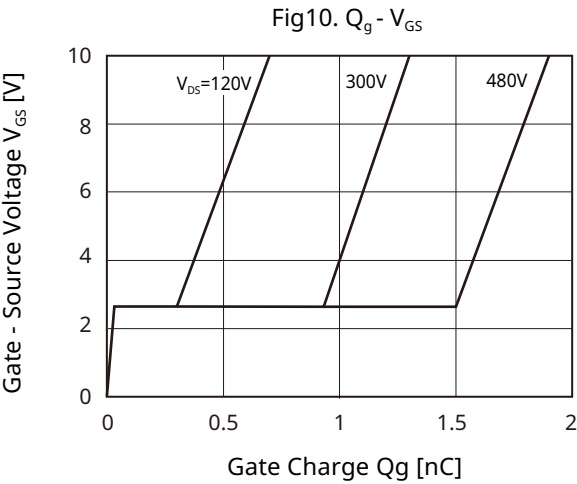
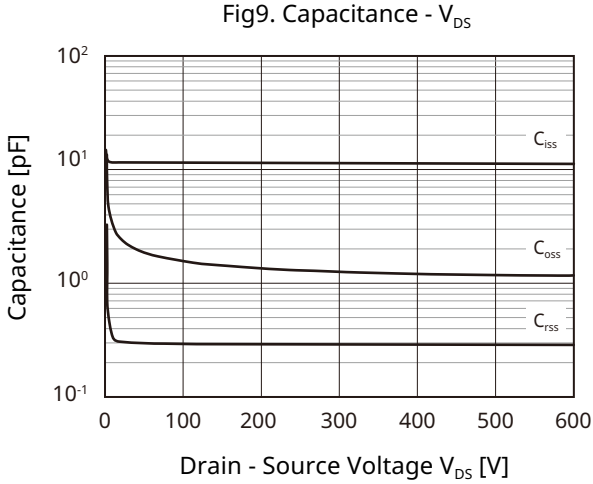
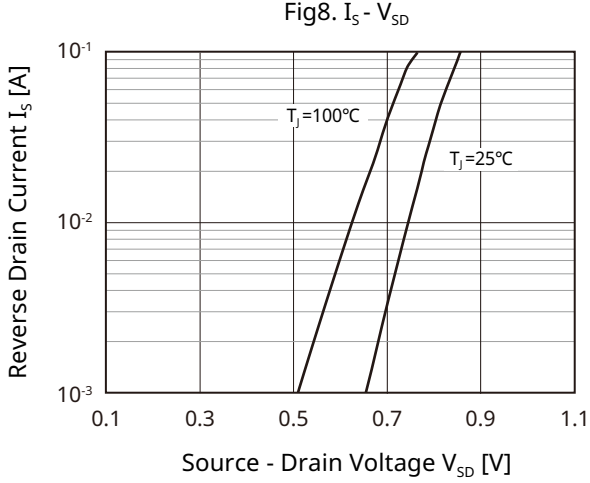
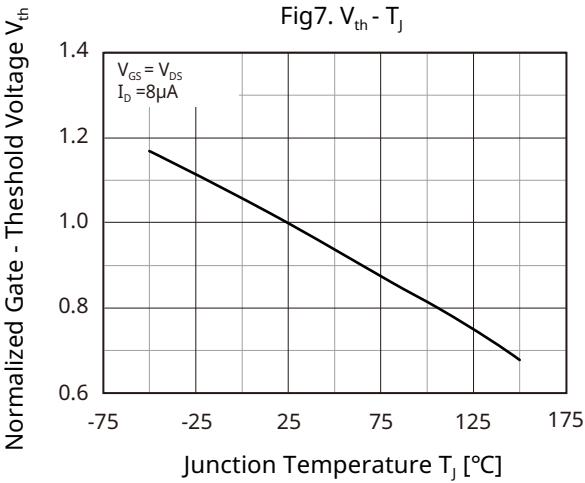


Fig6. $BV_{DSS} - T_J$



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Fig13. I_D - T_A

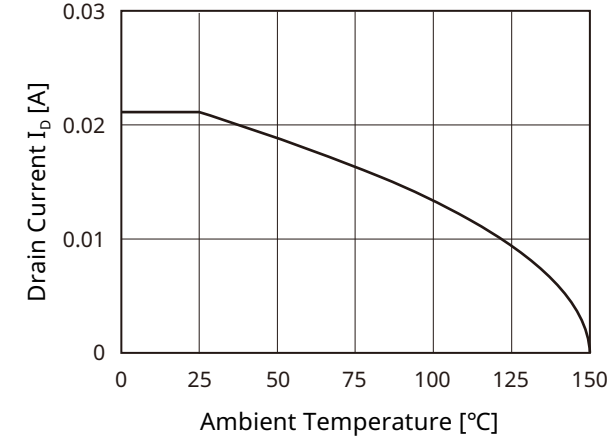
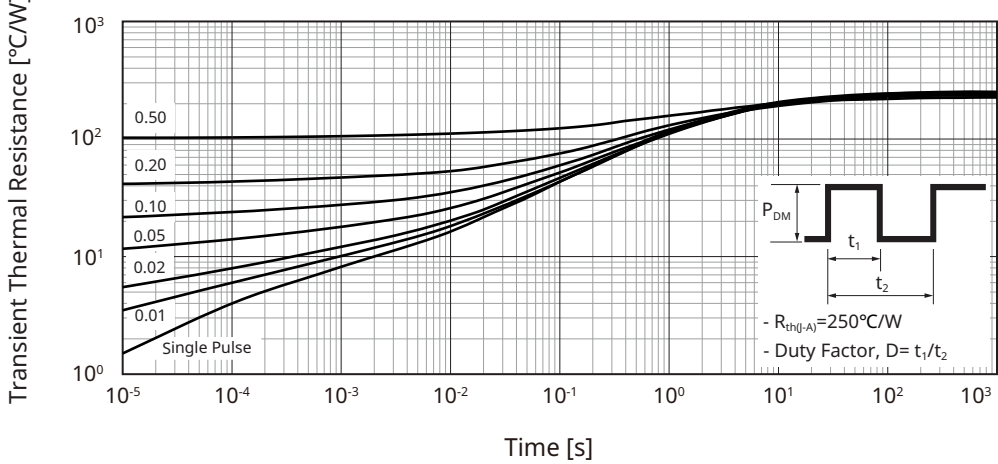


Fig14. Transient Rth Curve (J-A)



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Fig15. Gate Charge

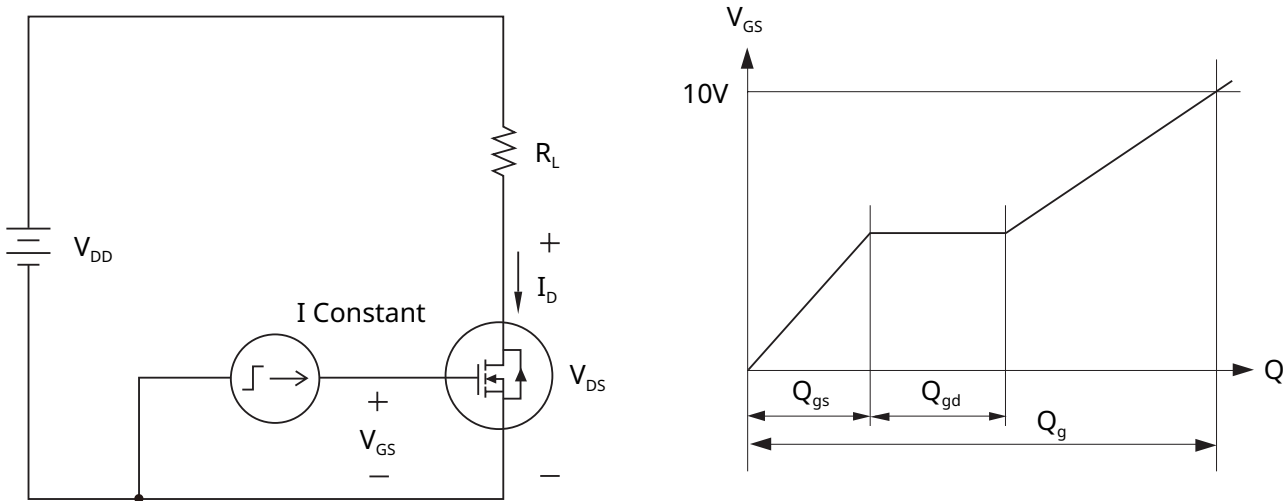


Fig16. Resistive Load Switching

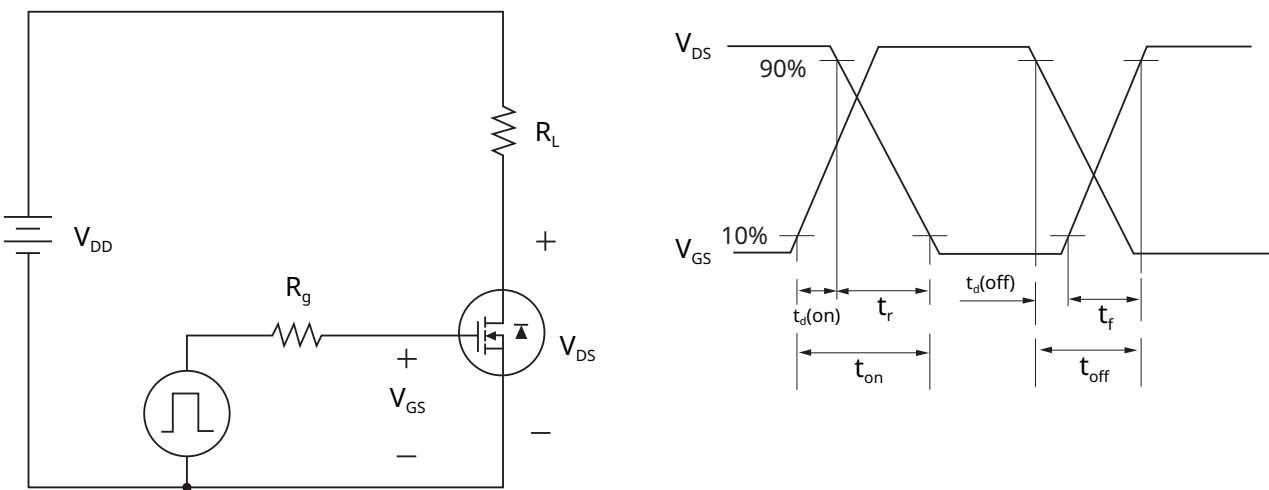
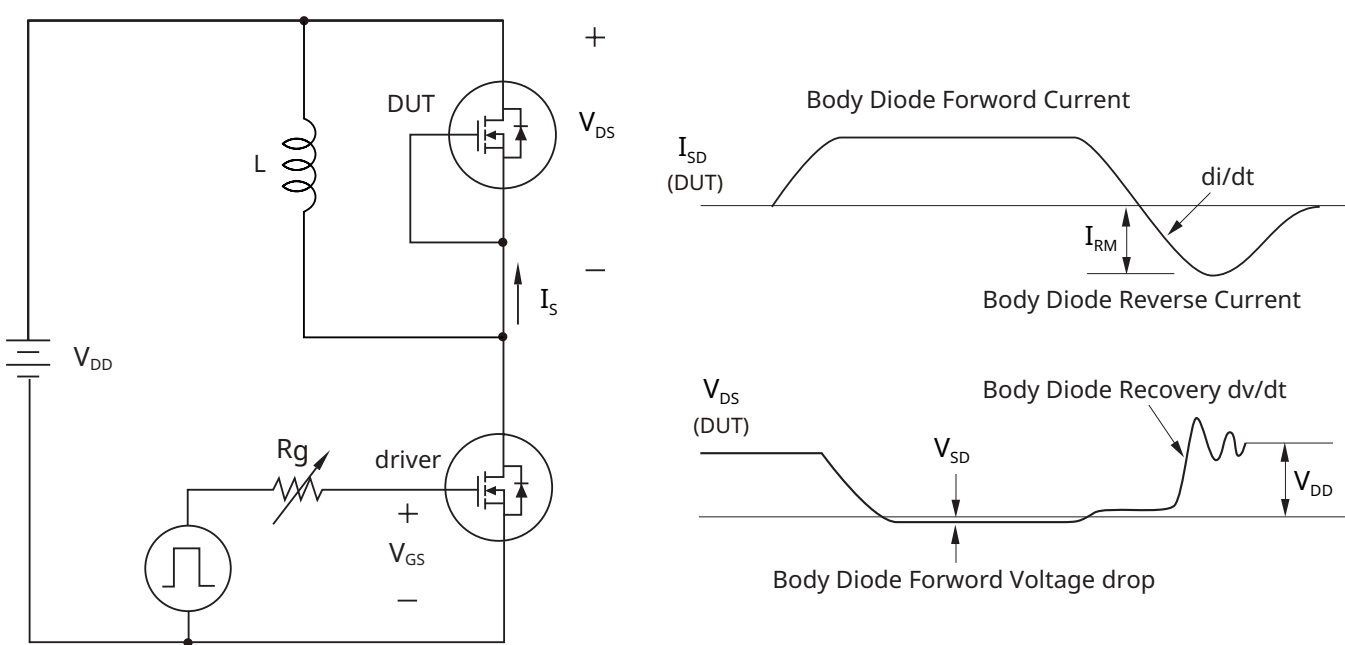
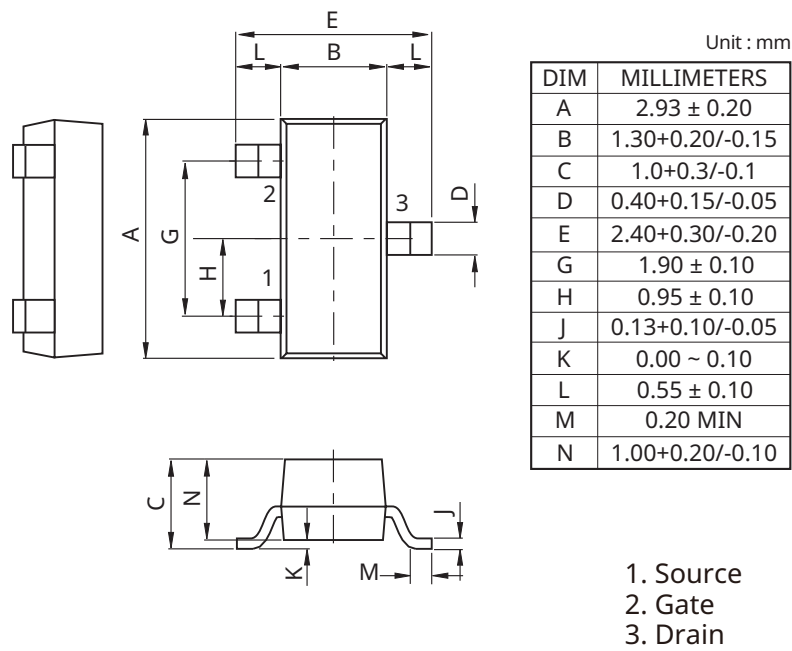


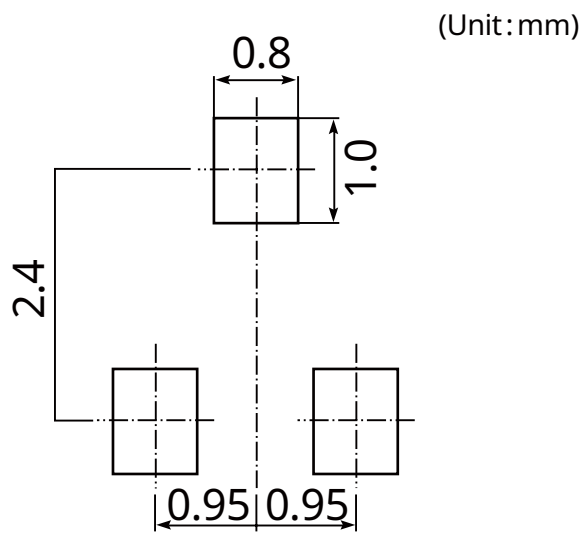
Fig17. Source - Drain Diode Reverse Recovery and dv/dt



PACKAGE INFORMATION(SOT-23)



RECOMMENDED PAD DIMENSION



PRODUCT DATASHEET
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ORDERING INFORMATION

Part Number	Status	Compliance			Packing Type	Packing Qty
		AEC-Q	Pb-Free	Halogen Free		
KF500KN60SP2Z-RTK/HP	Active	-	Y	Y	Reel	3,000pcs

PRECAUTION ON USING KEC PRODUCTS

1. The products described in this data are intended to be used in general-purpose electronic equipment.
(Office equipment, telecommunication equipment, measuring equipment, home appliances)
2. When you intend to use these products with equipment or device which require an extremely high of reliability and special applications (such as automobile, air travel aerospace, transportation equipment, life support, system and safety devices) in which special quality and reliability and the failure or malfunction of products may directly jeopardize or harm the human body or damage to property and any application other than the standard application intended, please be sure to consult with our sales representative in advance.
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