

N-Ch Trench MOSFET

KU690N06DT2A

This Trench MOSFET has better characteristics, such as fast switching time, low on resistance, low gate charge and excellent avalanche characteristics.

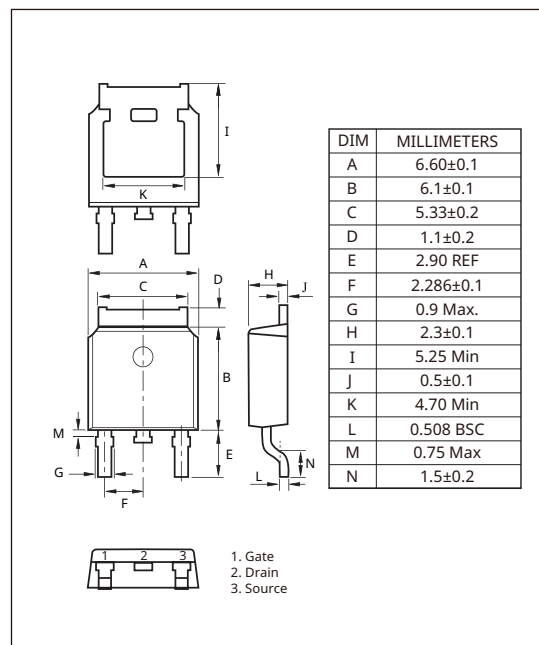
FEATURES

- $V_{DS}=55V$, $I_D=18A$
- Drain-Source ON Resistance:
 $R_{DS(ON)}(typ)=38m\Omega$ @ $V_{GS}=10V$

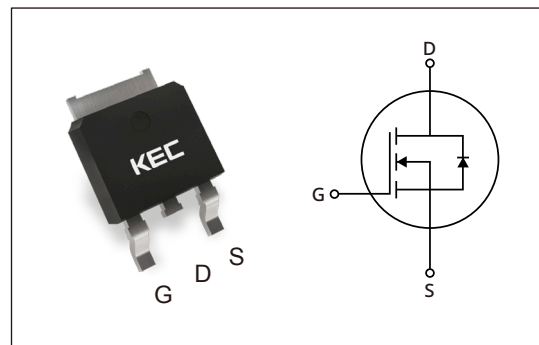
APPLICATION

- Automotive and general purpose power switching DC/DC Converters
- Motors, lamps and solenoids
- 12V and 24V loads

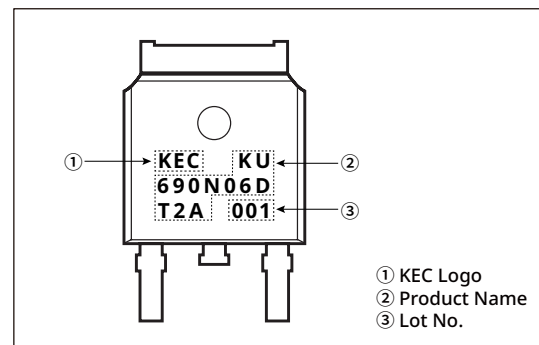
PACKAGE DIMENSION(DPAK(3))



PIN CONFIGURATION



MARKING CODE



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N-Ch Trench MOSFET - KU690N06DT2A

MAXIMUM RATING (T_J=25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Drain-Source Voltage		V _{DSS}	55	V
Gate-Source Voltage		V _{GSS}	±15	V
Drain Current	@T _C =25°C	I _D	18	A
	@T _C =100°C	I _D	12.7	
	Pulsed (Note 1,2)	I _{DP}	47	
Single Pulsed Avalanche Energy (Note 3)		E _{AS}	33	mJ
Drain Power Dissipation	T _C =25°C	P _D	48	W
Maximum Junction Temperature		T _J	175	°C
Operation and Storage Temperature Range		T _{opr} , T _{stg}	-55 ~ 175	°C
Thermal Characteristics				
Thermal Resistance, Junction-to-Case		R _{thJC}	3.1	°C/W
Thermal Resistance, Junction-to-Ambient		R _{thJA}	110	°C/W

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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	55	-	-	V
Drain Cut-off Current	I _{DSS}	V _{DS} =55V, V _{GS} =0V, T _J =25°C	-	0.05	10	μA
		V _{DS} =55V, V _{GS} =0V, T _J =175°C	-	-	500	
Gate Threshold Voltage	V _{th}	V _{DS} =V _{GS} , I _D =1mA, T _J =25°C	1.0	1.5	2.0	V
		V _{DS} =V _{GS} , I _D =1mA, T _J =-55°C	-	-	2.3	
		V _{DS} =V _{GS} , I _D =1mA, T _J =175°C	0.5	-	-	
Gate Leakage Current	I _{GSS}	V _{GS} =±15V, V _{DS} =0V	-	±2	±100	nA
Drain-Source ON Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =10A, T _J =25°C	-	38	69	mΩ
		V _{GS} =4.5V, I _D =10A, T _J =25°C	-	-	86	
		V _{GS} =5V, I _D =10A, T _J =25°C	-	42	77	
		V _{GS} =5V, I _D =10A, T _J =175°C	-	-	154	
Dynamic						
Input Capacitance	C _{iss}	V _{DS} =25V, V _{GS} =0V, f=1.0MHz (Note 4)	-	620	-	pF
Output Capacitance	C _{oss}		-	67	-	
Reverse Transfer Capacitance	C _{rss}		-	38	-	
Turn-on Delay time	t _{d(on)}	V _{DD} =30V, R _L =1.2Ω, V _{GS} =10V, R _G =10Ω, T _J =25°C (Note 4)	-	7	-	ns
Turn-on Rise time	t _r		-	4	-	
Turn-off Delay time	t _{d(off)}		-	28	-	
Turn-off Fall time	t _f		-	7	-	
Total Gate Charge	Q _{g-10V}	V _{DD} =30V, I _D =10A, V _{GS} =10V	-	15	-	nC
	Q _{g-4.5V}		-	8	-	
Gate-Source Charge	Q _{gs}		-	1.6	-	
Gate-Drain Charge	Q _{gd}		-	3.2	-	
Source-Drain Diode Ratings						
Continuous Source Current	I _S	V _{GS} < V _{th} , T _C =25°C	-	-	18	A
Diode Forward Voltage	V _{SD}	I _S =15A, V _{GS} =0V	-	0.95	1.2	V
Reverse Recovery Time	t _{rr}	I _S =20A, V _{GS} =0V, V _{DS} =30V	-	34	-	ns
Reverse Recovery Charge	Q _{rr}		-	43	-	nC

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

Note 2) Pulse Test : Pulse width ≤ 300μs, Duty cycle ≤ 2%.

Note 3) I_D=18A, V_{DS}=30V, R_G=25Ω, V_{GS}=10V, Starting T_J=25°C

Note 4) Essentially independent of operating temperature.

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Fig1. $I_D - V_{DS}$

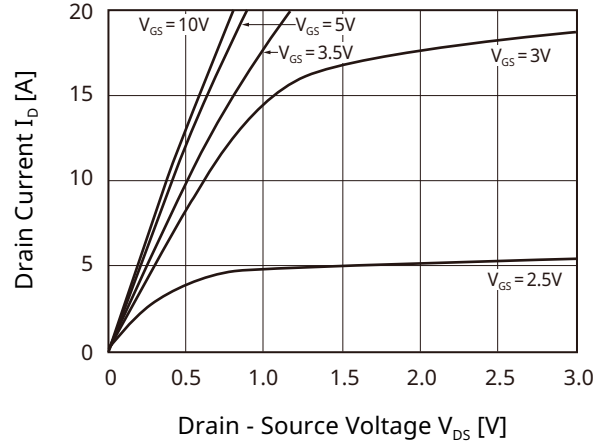


Fig2. $I_D - V_{DS}$

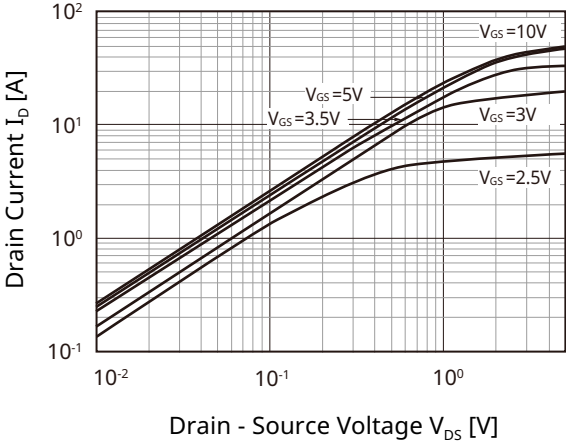


Fig3. $I_D - V_{GS}$

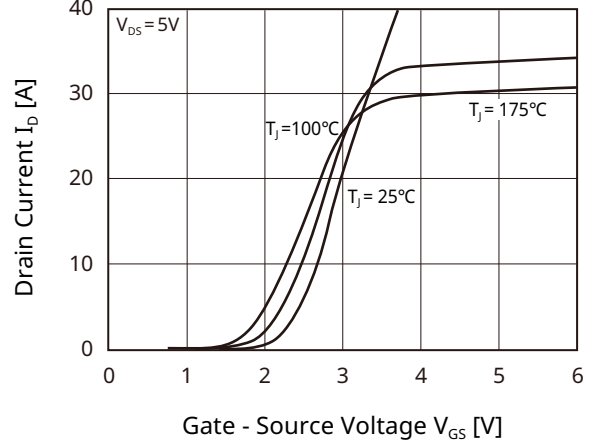


Fig4. $R_{DS(ON)} - I_D$

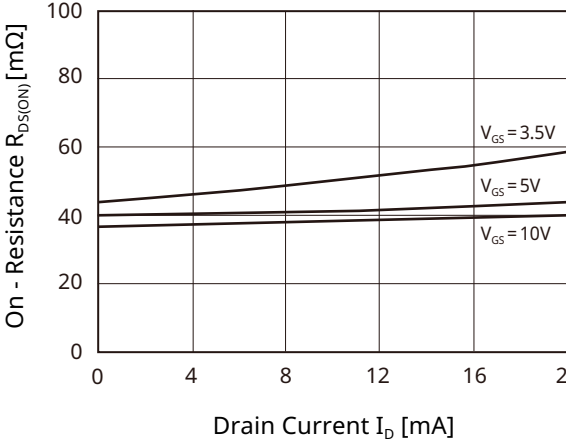


Fig5. $R_{DS(ON)} - V_{GS}$

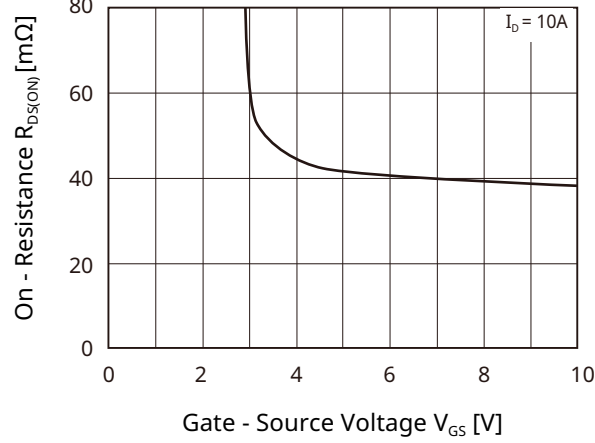
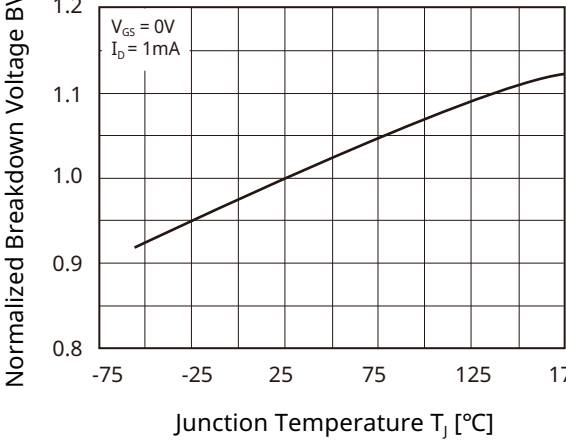
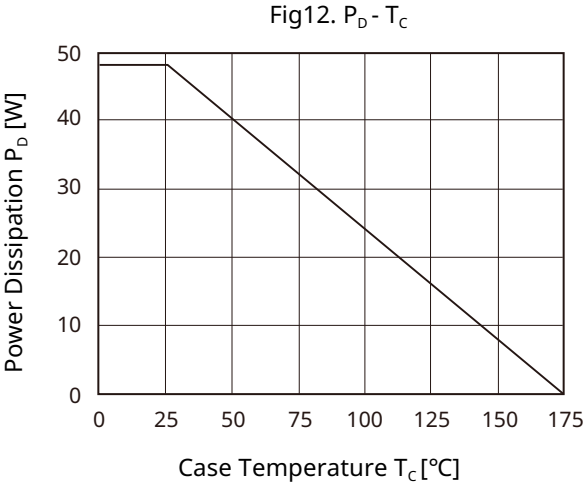
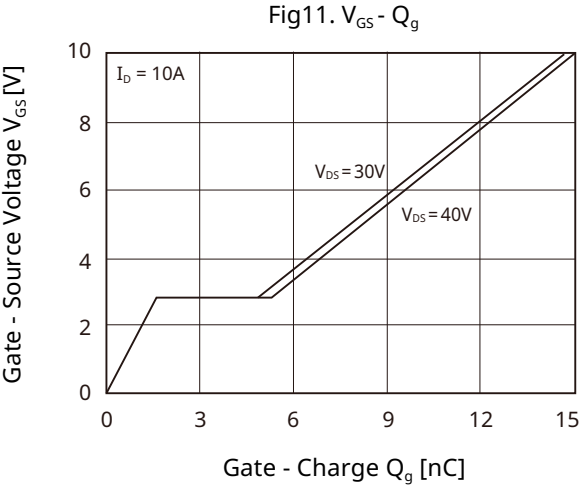
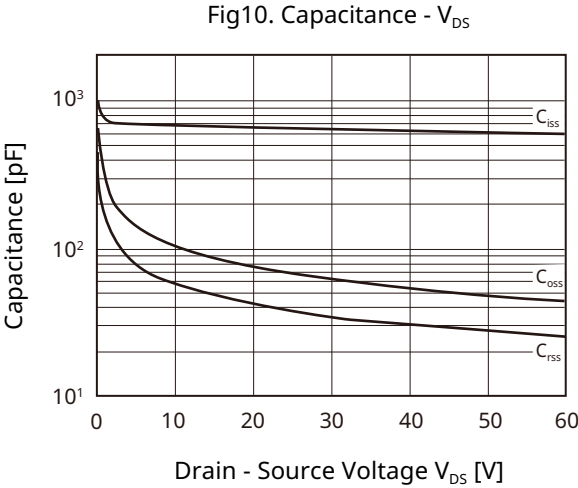
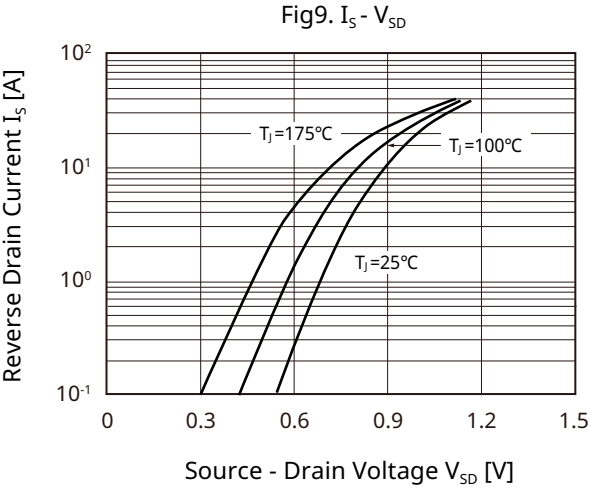
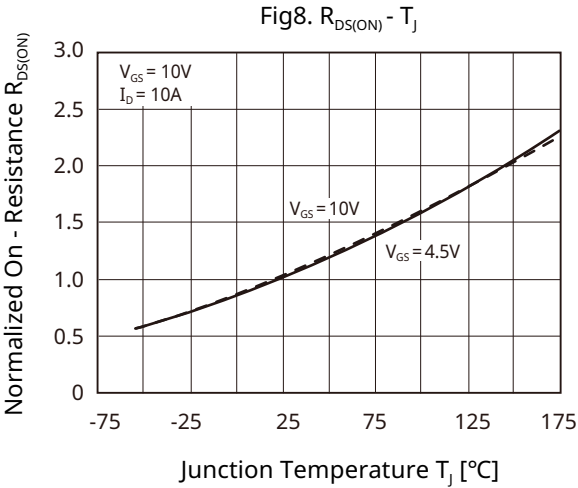
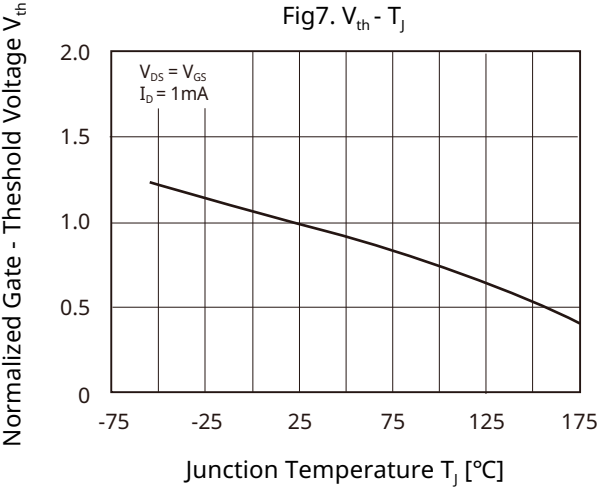


Fig6. $BV_{DSS} - T_J$



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Fig13. $I_D - T_J$

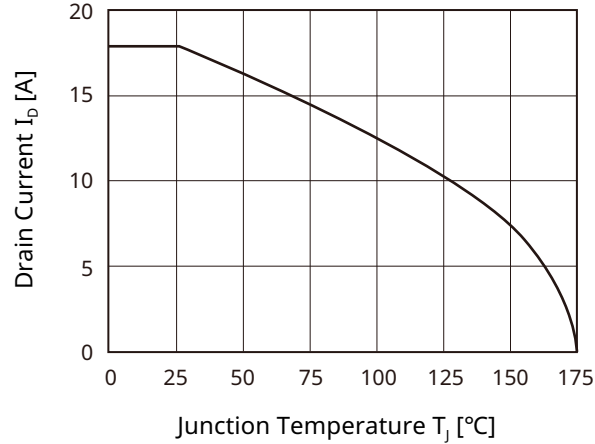


Fig14. Safe Opreation Area

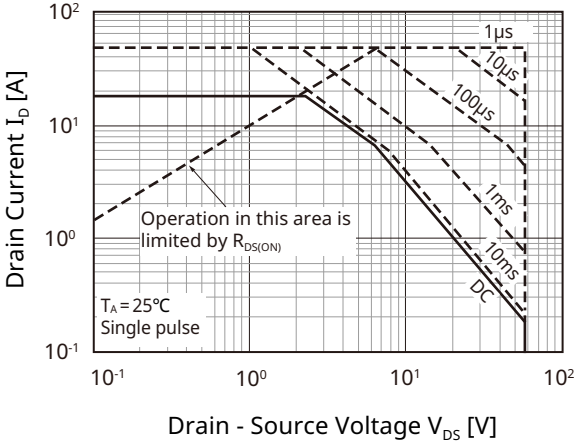


Fig15. Transient Rth Curve(J-C)

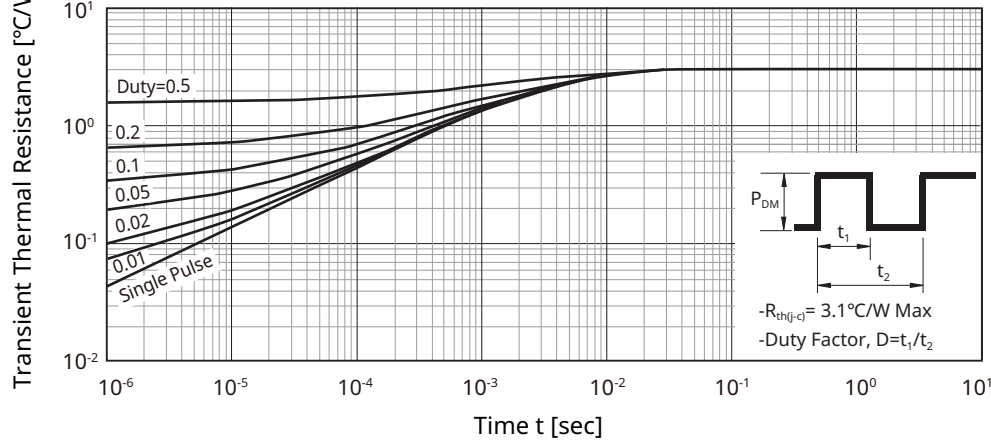


Fig16. Gate Charge

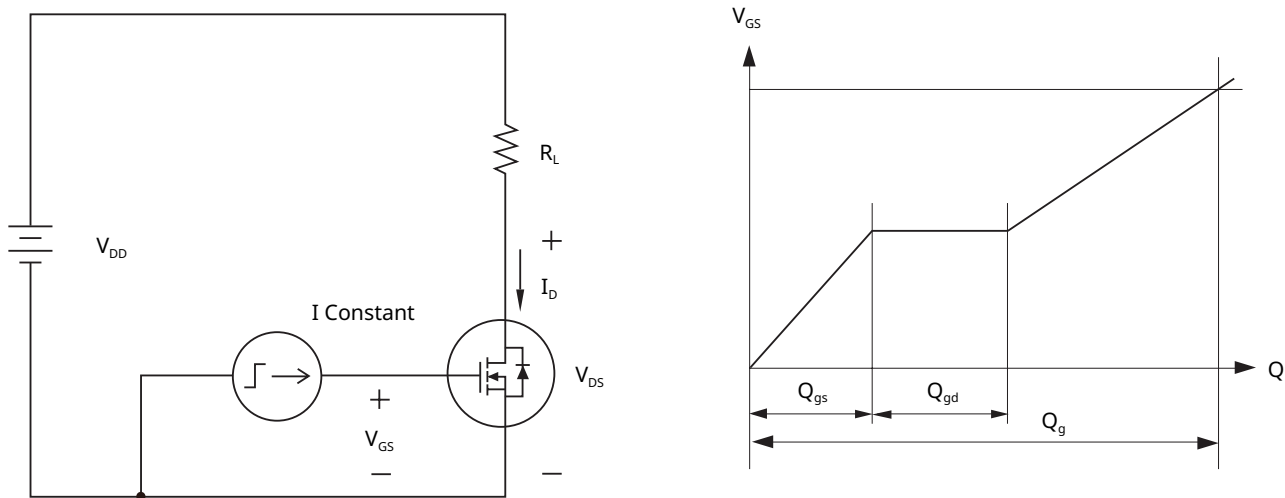
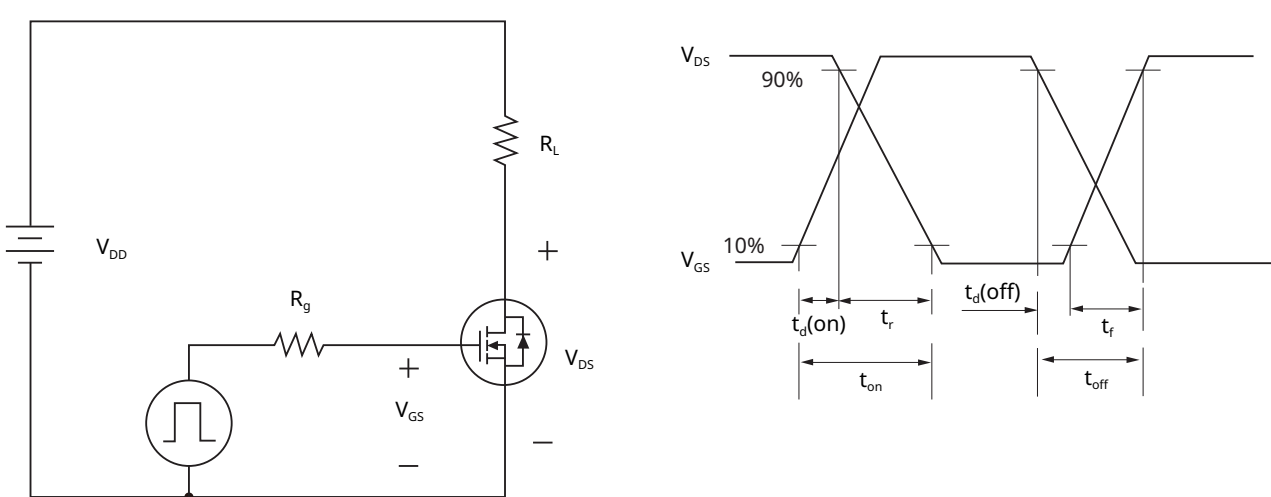


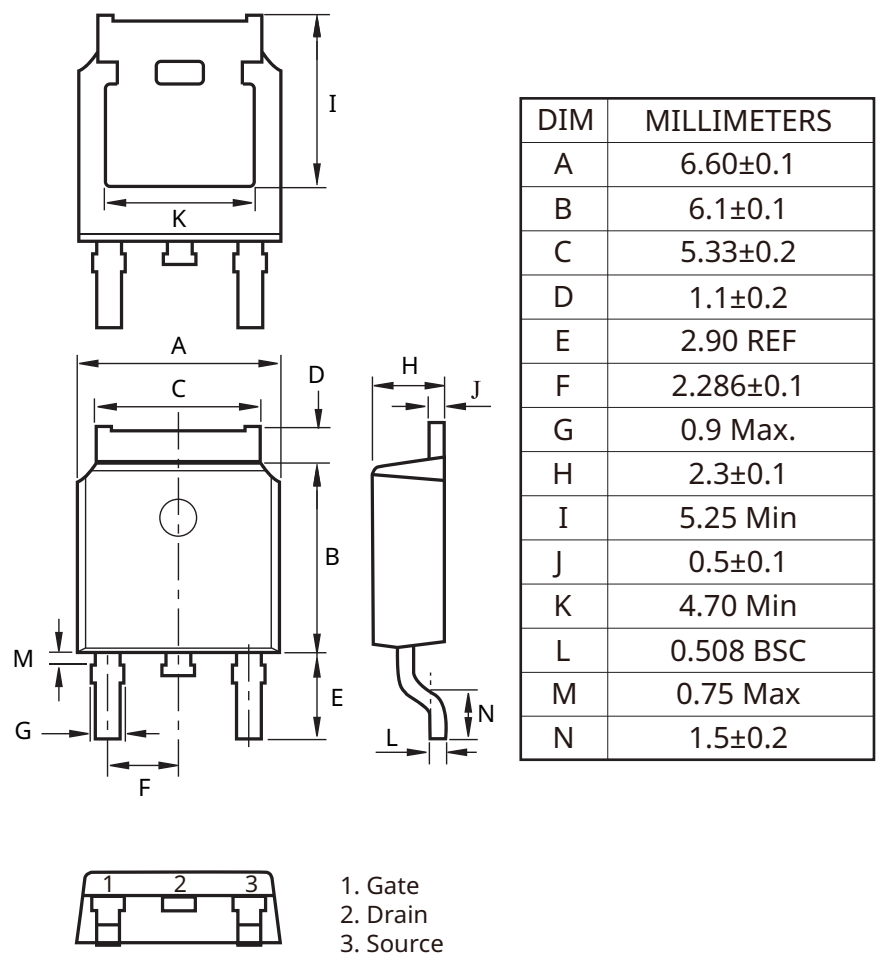
Fig17. Resistive Load Switching



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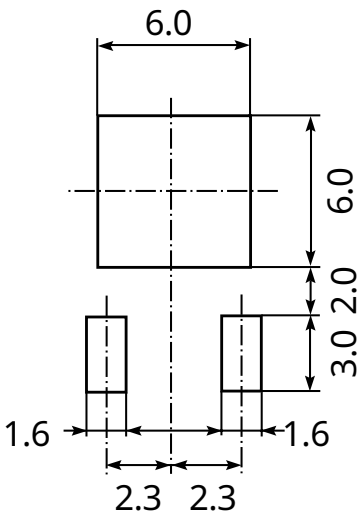
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PACKAGE DIMENSION(DPAK(3))



RECOMMENDED PAD DIMENSION

UNIT: mm



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ORDERING INFORMATION

Part Number	Status	Compliance			Packing Type	Packing Qty
		AEC-Q	Pb-Free	Halogen Free		
KU690N06DT2A-RTF/HUQ	Active	Y	Y	Y	Reel	3,000pcs

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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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For additional information,
please contact your local Sales Representative.

SOUTH KOREA (Headquarters)
KEC CORPORATION
PHONE : +82-2-2025-5000
sales@kec.co.kr

JAPAN
KEC JAPAN CO.,LTD.
PHONE : +81-03-5475-2691
kec_jp@kec.co.kr

SINGAPORE
KEC SINGAPORE PTE., LTD.
PHONE : +65-6748-7372(#102)
kec_sg@kec.co.kr

THAILAND
KEC THAILAND BANGKOK OFFICE
PHONE : +66-2-576-1484~5
kec_th@kec.co.kr

CHINA
KEC SHANGHAI CO.,LTD.
PHONE : +86-21-5490-2277
kec_sh@kec.co.kr

KEC SHENZHEN OFFICE
PHONE : +86-755-8830-8899
kec_hk@kec.co.kr

KEC TIANJIN OFFICE
PHONE : +86-21-5490-2277
kec_sh@kec.co.kr

HONG KONG
KEC HK CORP. LTD
PHONE : +852-2249-3734
kec_hk@kec.co.kr

TAIWAN
KEC TAIWAN CO.,LTD.
PHONE : +886-2-2515-8359
kec_twn@kec.co.kr

U.S.A
KEC AMERICA CORP.
PHONE : +1-714-259-0662
kec_a@kec.co.kr

