

N-Ch Trench MOSFET KU200N06DT2

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

This product has been designed and qualified to the appropriate AEC standard for use in automotive critical applications.

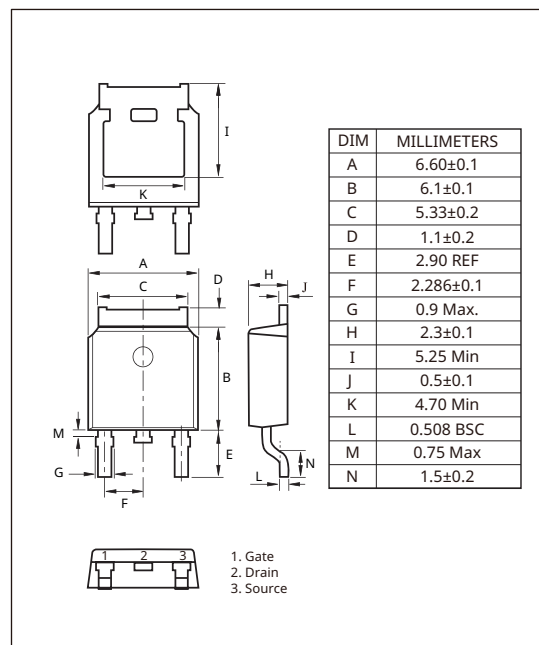
FEATURES

- $V_{DS}=55V$, $I_D=46A$
- Drain-Source ON Resistance:
 $R_{DS(ON)}(typ)=13m\Omega$ @ $V_{GS}=10V$

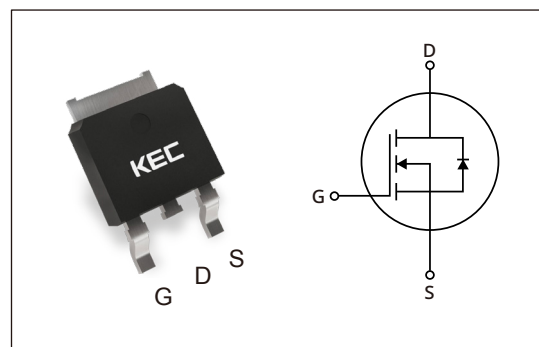
APPLICATION

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

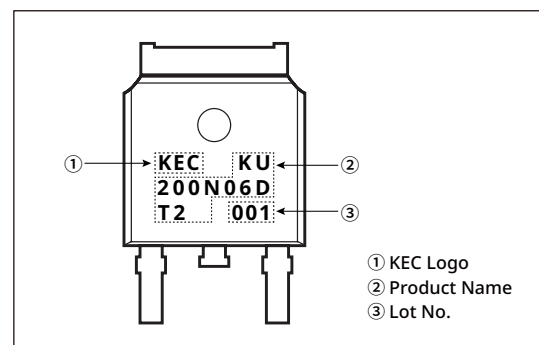
PACKAGE DIMENSION(DPAK(3))



PIN CONFIGURATION



MARKING CODE



PRODUCT DATASHEET

N-Ch Trench MOSFET - KU200N06DT2

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	46	A
	@T _C =100°C	I _D	32.6	
	(Note 1,2) Pulsed	I _{DP}	160	
Single Pulsed Avalanche Energy		E _{AS}	160	mJ
(Note 3)				
Drain Power Dissipation	T _C =25°C	P _D	94	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}	1.6	°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} =±10V , V _{DS} =0V	-	±2	±100	nA
Drain-Source ON Resistance	R _{DS(ON)}	V _{GS} =5V, I _D =25A, T _J =175°C	-	-	44	mΩ
		V _{GS} =4.5V, I _D =25A, T _J =25°C	-	-	24	
		V _{GS} =10V, I _D =25A, T _J =25°C	-	13	20	
		V _{GS} =5V, I _D =25A, T _J =25°C	-	14	22	
Dynamic						
Input Capacitance	C _{iss}	V _{DS} =25V, V _{GS} =0V, f=1.0MHz (Note 4)	-	2050	2730	pF
Output Capacitance	C _{oss}		-	200	240	
Reverse Transfer Capacitance	C _{rss}		-	130	180	
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)	-	15	-	ns
Turn-on Rise time	t _r		-	10	-	
Turn-off Delay time	t _{d(off)}		-	87	-	
Turn-off Fall time	t _f		-	25	-	
Total Gate Charge	Q _{g-10V}	V _{DD} =30V, I _D =25A	-	49	-	nC
	Q _{g-4.5V}		-	24	-	
Gate-Source Charge	Q _{gs}		-	6	-	
Gate-Drain Charge	Q _{gd}		-	11	-	
Source-Drain Diode Ratings						
Continuous Source Current	I _S	V _{GS} < V _{th} , T _C =25°C	-	-	48	A
Diode Forward Voltage	V _{SD}	I _S =25A, V _{GS} =0V	-	0.88	1.2	V
Reverse Recovery Time	t _{rr}	I _S =20A, V _{GS} =-10V, V _{DS} =30V dI _S /dt=100A/μs	-	42	-	ns
Reverse Recovery Charge	Q _{rr}		-	70	-	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=48A, V_{DS}=30V, R_G=25Ω, V_{GS}=10V, L=100μH Starting T_J=25°C.

Note 4) Essentially independent of operating temperature.

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

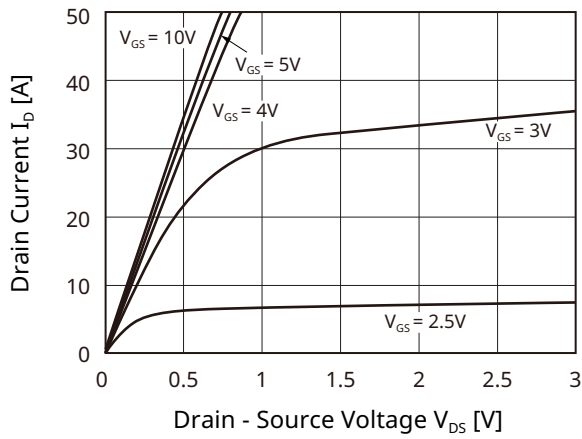


Fig 2. $I_D - V_{DS}$ - 2

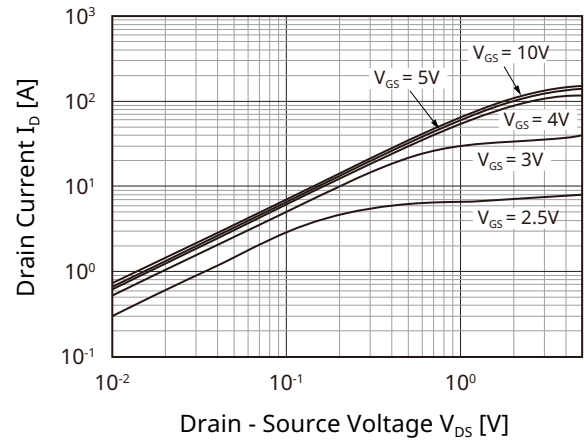


Fig 3. $I_D - V_{GS}$

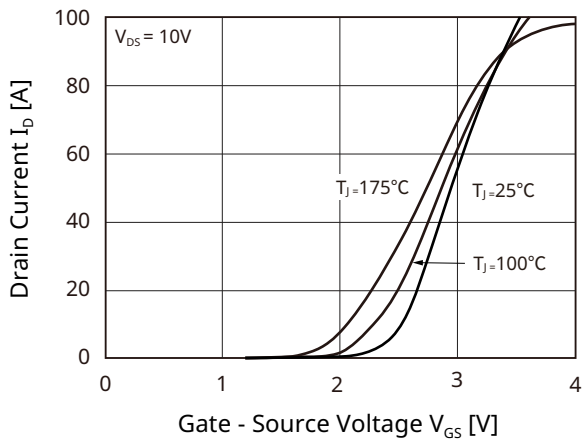


Fig 4. $R_{DS(ON)} - I_D$

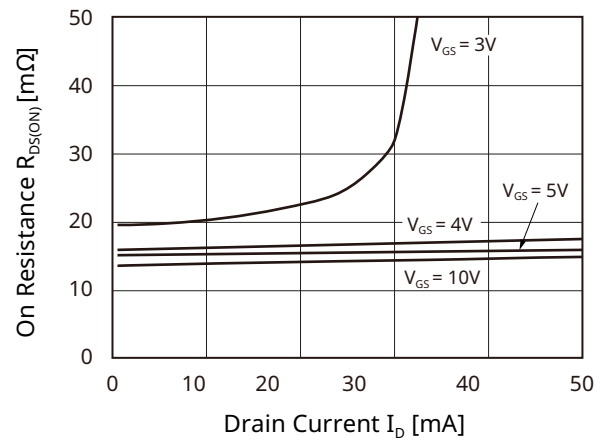


Fig 5. $R_{DS(ON)} - V_{GS}$

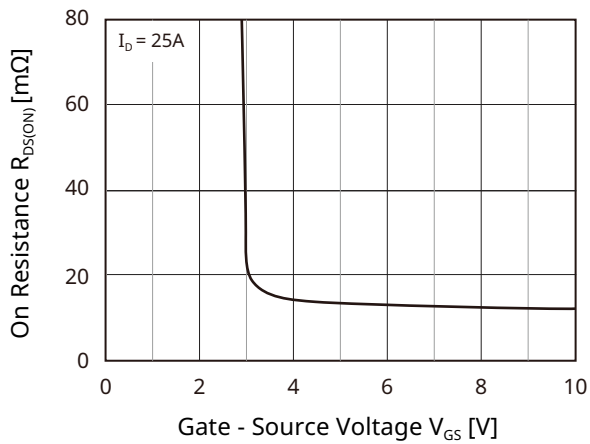
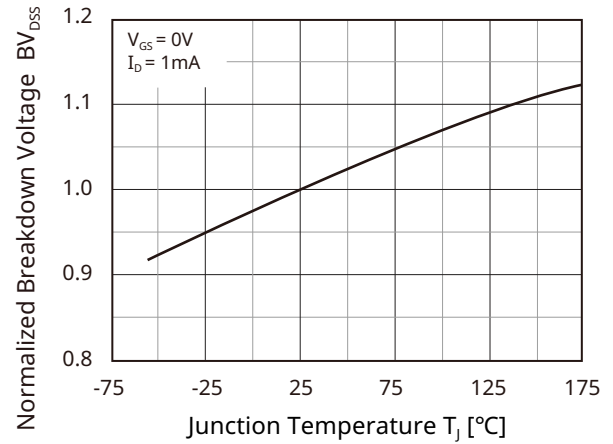


Fig 6. $BV_{DSS} - T_J$



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Fig 7. $V_{th} - T_J$

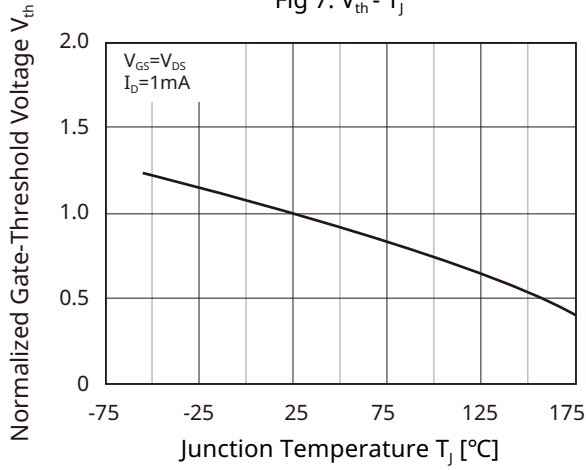


Fig 8. $R_{DS(ON)} - T_J$

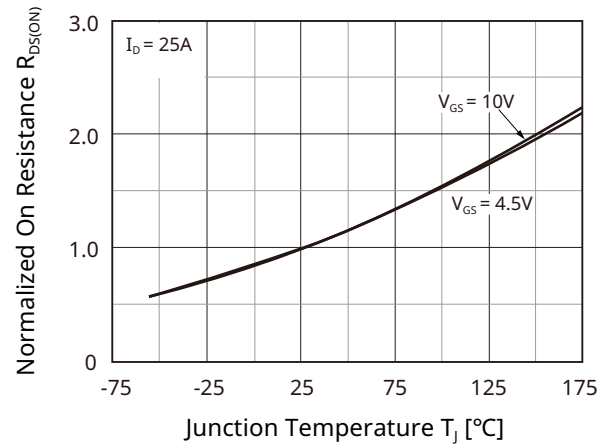


Fig 9. $I_S - V_{SD}$

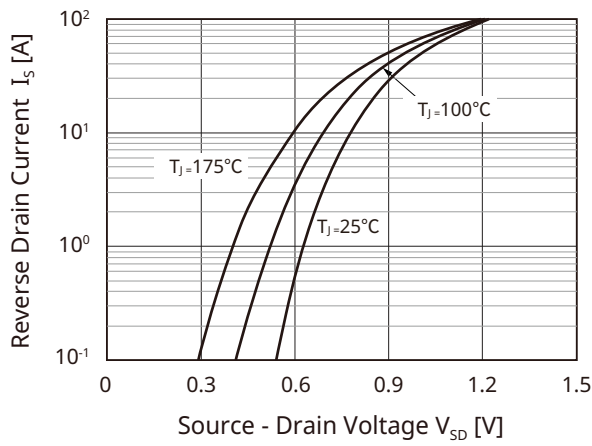


Fig 10. Capacitance V_{DS}

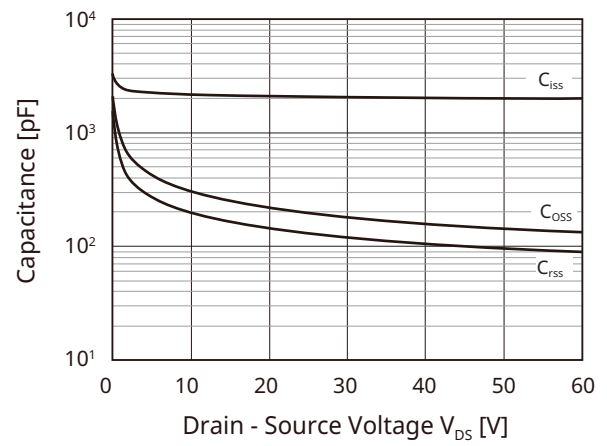


Fig 11. $Q_g - V_{GS}$

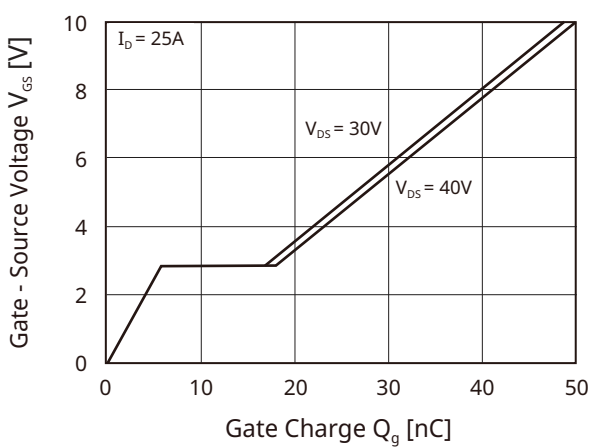
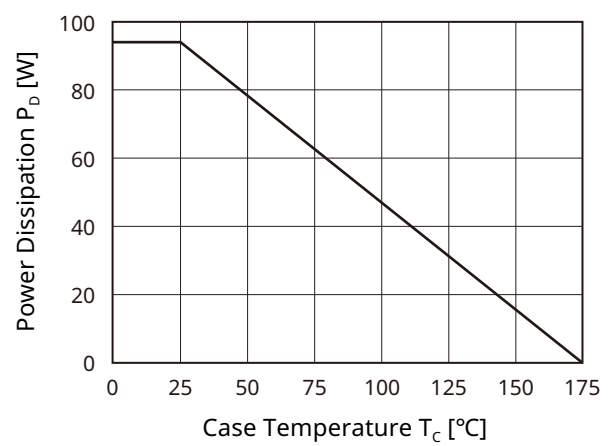


Fig 12. $P_D - T_C$



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Fig 13. $I_D - T_J$

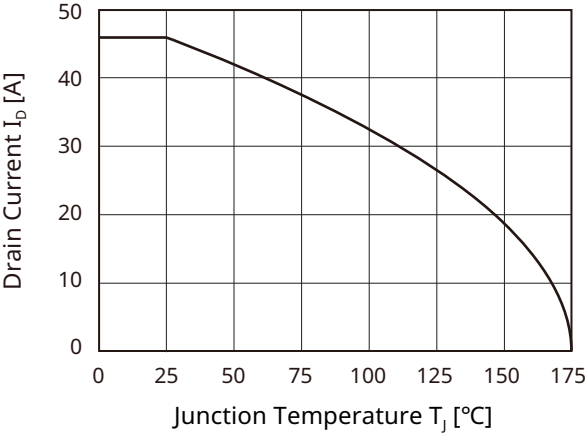


Fig 14. Safe Operation Area

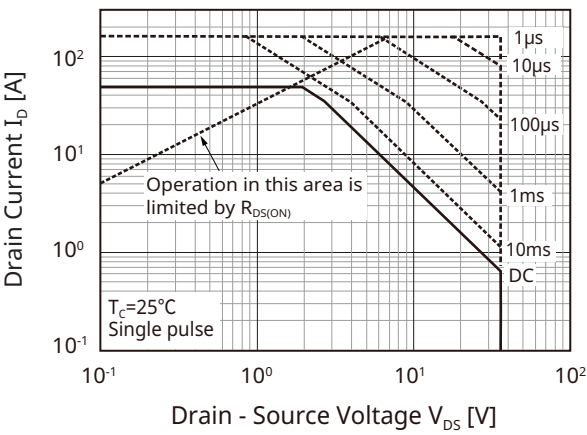
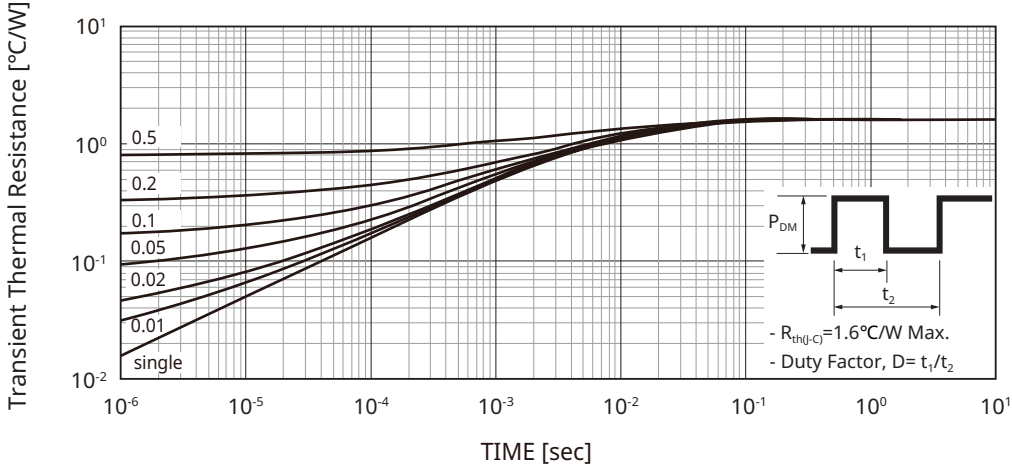
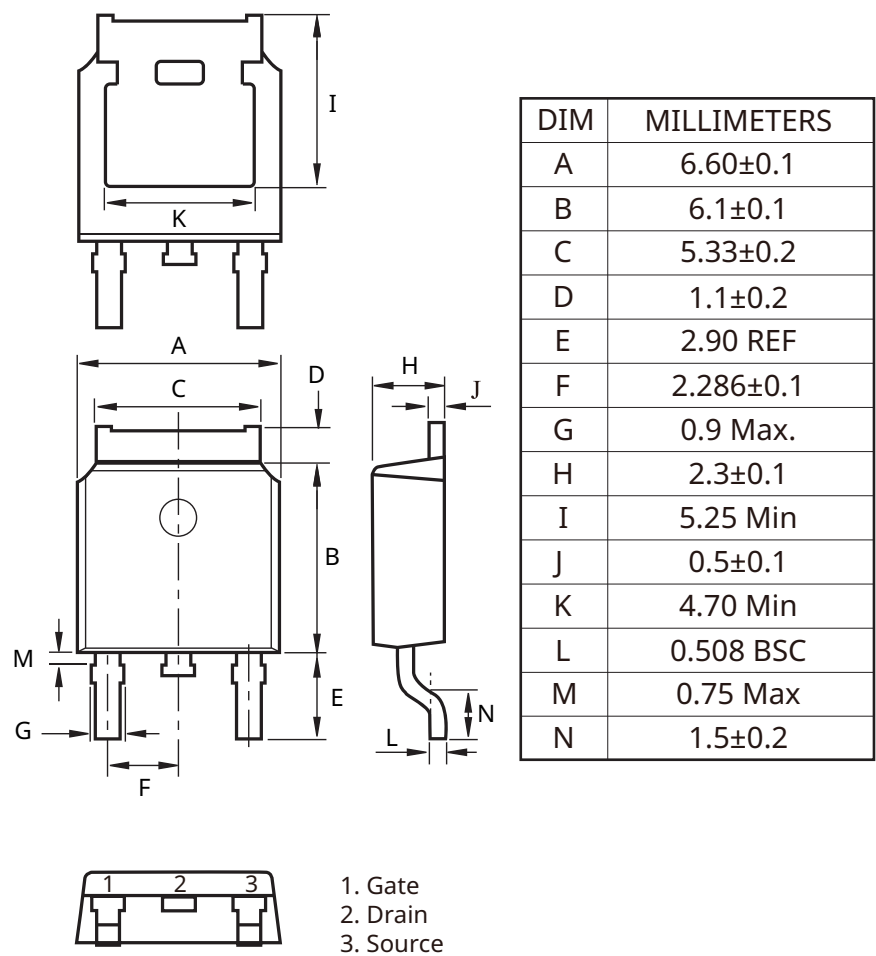


Fig 15. Transient Rth Curve (J-C)

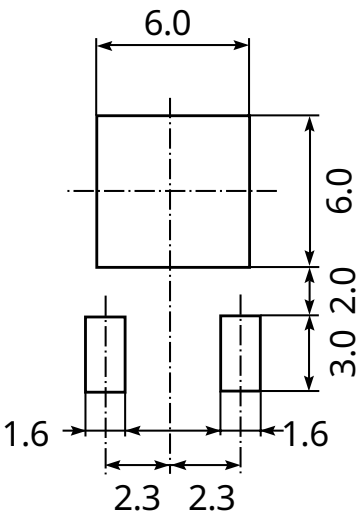


PACKAGE DIMENSION(DPAK(3))



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		
KU200N06DT2-RTF/HUQ	Active	Y	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.
3. On designing your application, please use product within the ranges guaranteed by KEC for maximum rating, operating supply voltage range, heat radiation characteristics and other characteristics. User shall be responsible for failure or damage when used beyond the guaranteed ranges.
4. The technical information described in this data is limited to showing representative characteristics and applied circuit examples of the products and it does not constitute the warranting of industrial property, the granting of relative rights, or the granting of any license.
5. What are described in the data may be changed without any prior notice to reflect new technical development. Please confirm that you have received the latest product standards or specification before final design, purchase or use.
6. Although KEC is continuously working to improve product reliability and quality, semiconductors can break down and malfunction due to various factors. Therefore, in order to prevent personal injury or fire arising from failure, please take safety measures such as complying with the derating characteristics, implementing redundant and fire prevention designs, and utilizing backups and fail-safe procedures. KEC shall have no responsibility for any damages arising out of the use of our Products beyond the rating specified by KEC.

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