

产品规格书

批准	审核	校核	编制
纪春华	朴致均	赵宇辉	郑羿
2019.08.05	2019.08.05	2019.08.05	2019.08.05

规格书更改履历:

序号	更改内容	履历号	更改时间	责任人
1	新规制定	000	2019.08.05	郑羿

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SWITCHING REGULATOR APPLICATIONS

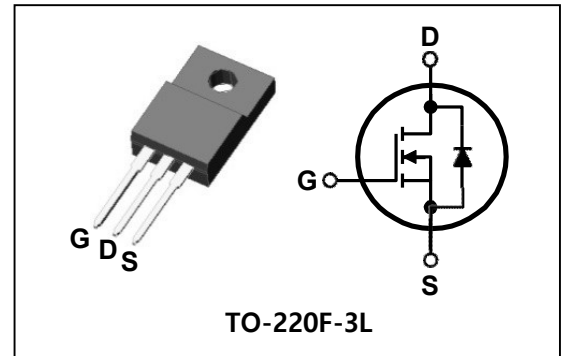
Features

- High Voltage : $BV_{DSS}=650V$ (Min.)
- Low C_{rss} : $C_{rss}=9pF$ (Typ.)
- Low gate charge : $Q_g=21nC$ (Typ.)
- Low $R_{DS(on)}$: $R_{DS(on)}=1.57\Omega$ (Max.)

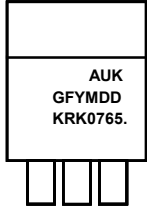
Ordering Information

Type No.	Marking	Package Code
KRK0765F	KRK0765.	TO-220F-3L
KRK0765FA	KRK0765.	TO-220F-3L

PIN Connection



Marking Diagram

	<p>Column 1 : Manufacturer</p> <p>Column 2 : Production Information e.g.) GFYMDD</p> <ul style="list-style-type: none"> - . G : Option Code (H : Halogen Free) - . F : Factory Management Code - . YMDD : Date Code (Year, Month, Date) <p>Column 3 : Device Code . Dalian</p>
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Absolute maximum ratings ($T_c=25^\circ C$ unless otherwise noted)

Characteristic	Symbol	Rating	Unit	
Drain-source voltage	V_{DSS}	650	V	
Gate-source voltage	V_{GSS}	± 30	V	
Drain current (DC) *	I_D	$T_c=25^\circ C$	7	A
		$T_c=100^\circ C$	4.43	A
Drain current (Pulsed) *	I_{DM}	28	A	
Power dissipation	P_D	32	W	
Avalanche current (Single) ②	I_{AS}	7	A	
Single pulsed avalanche energy ②	E_{AS}	530	mJ	
Avalanche current (Repetitive) ①	I_{AR}	7	A	
Repetitive avalanche energy ①	E_{AR}	3.2	mJ	
Junction temperature	T_J	150	$^\circ C$	
Storage temperature range	T_{stg}	-55~150		

* Limited by maximum junction temperature

Characteristic	Symbol	Typ.	Max.	Unit
Thermal resistance	Junction-case	-	3.9	$^\circ C/W$
	Junction-ambient	-	62.5	

Electrical Characteristics (T_C=25°C unless otherwise noted)

Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit	
Drain-source breakdown voltage	BV _{DSS}	I _D =250μA, V _{GS} =0	650	-	-	V	
Gate threshold voltage	V _{GS(th)}	I _D =250μA, V _{DS} =V _{GS}	2.0	-	5.0	V	
Drain-source cut-off current	I _{DSS}	V _{DS} =650V, V _{GS} =0V	-	-	1	μA	
Gate leakage current	I _{GSS}	V _{DS} =0V, V _{GS} =±30V	-	-	±100	nA	
Drain-source on-resistance ④	R _{DS(ON)}	V _{GS} =10V, I _D =3.5A	-	1.2	1.57	Ω	
Forward transfer conductance ④	g _{fs}	V _{DS} =10V, I _D =3.5A	-	8.7	-	S	
Input capacitance	C _{iss}	V _{GS} =0V, V _{DS} =25V, f=1MHz	-	1380		pF	
Output capacitance	C _{oss}		-	90			
Reverse transfer capacitance	C _{rss}		-	9			
Turn-on delay time	t _{d(on)}	V _{DD} =325V, I _D =7A R _G =25Ω	-	94	-	ns	
Rise time	t _r		-	89	-		
Turn-off delay time	t _{d(off)}		③④	-	182		-
Fall time	t _f		-	53	-		
Total gate charge	Q _g	V _{DS} =520V, V _{GS} =10V I _D =7A	-	21	26	nC	
Gate-source charge	Q _{gs}		-	9	-		
Gate-drain charge	Q _{gd}		③④	-	5		-

Source-Drain Diode Ratings and Characteristics (T_C=25°C unless otherwise noted)

Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Source current (DC)	I _S	Integral reverse diode in the MOSFET	-	-	7	A
Source current (Pulsed) ①	I _{SM}		-	-	28	
Forward voltage ④	V _{SD}	V _{GS} =0V, I _S =7A	-	-	1.4	V
Reverse recovery time	t _{rr}	I _S =7A, V _{GS} =0V dI _F /dt=100A/μs	-	474	-	ns
Reverse recovery charge	Q _{rr}		-	2.4	-	μC

Note ;

- ① Repetitive rating : Pulse width limited by maximum junction temperature
- ② L=20mH, I_{AS}=7A, V_{DD}=50V, R_G=25Ω, Starting T_J=25°C
- ③ Pulse Test : Pulse width≤300μs, Duty cycle≤2%
- ④ Essentially independent of operating temperature

Electrical Characteristic Curves

Fig. 1 Typical Output Characteristics

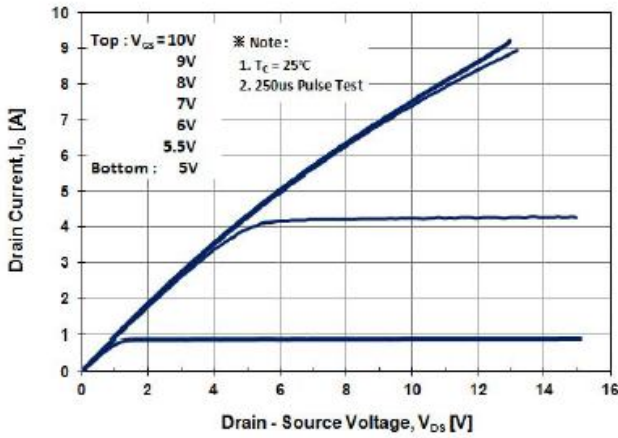


Fig. 2 Typical Output Characteristics

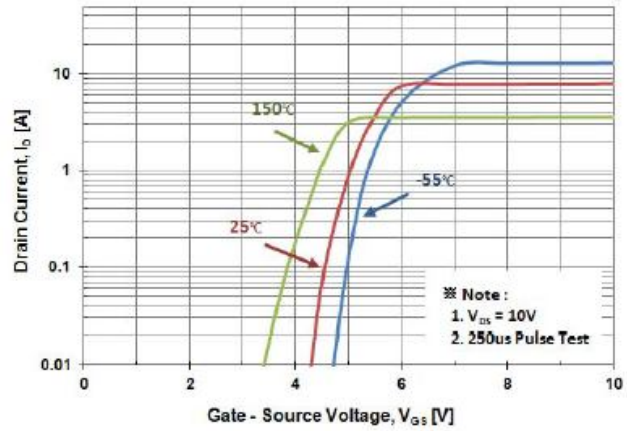


Fig. 3 On-Resistance Variation with Drain Current and Gate Voltage

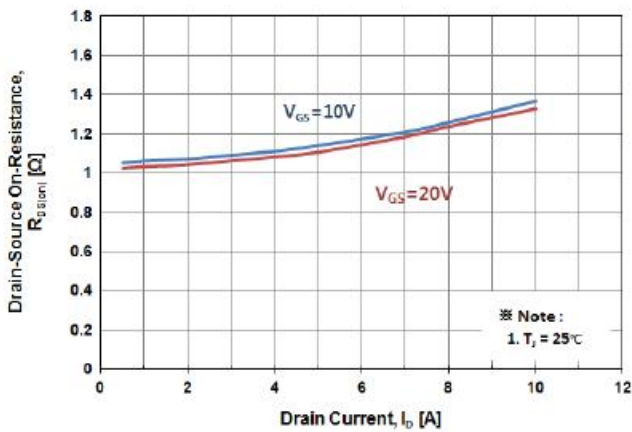


Fig. 4 Body Diode Forward Voltage Variation with Source Current

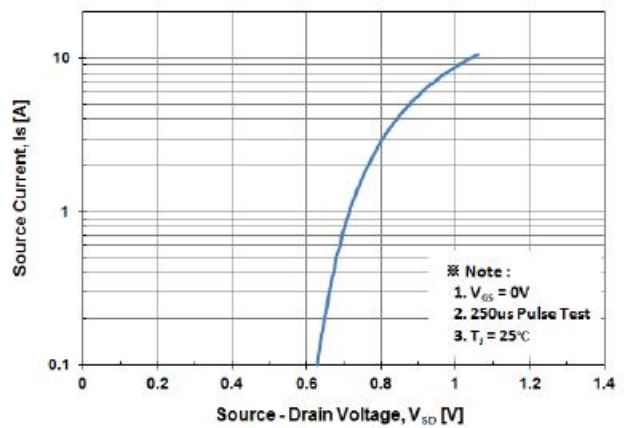


Fig. 5 Typical Capacitance Characteristics

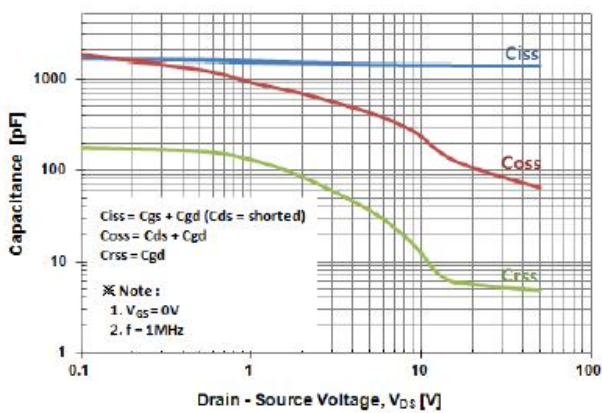
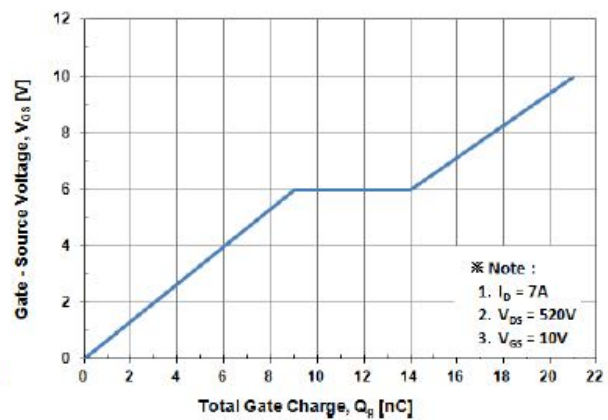


Fig. 6 Typical Total Gate Charge Characteristics



Electrical Characteristic Curves

Fig. 7 Breakdown Voltage Variation vs. Temperature

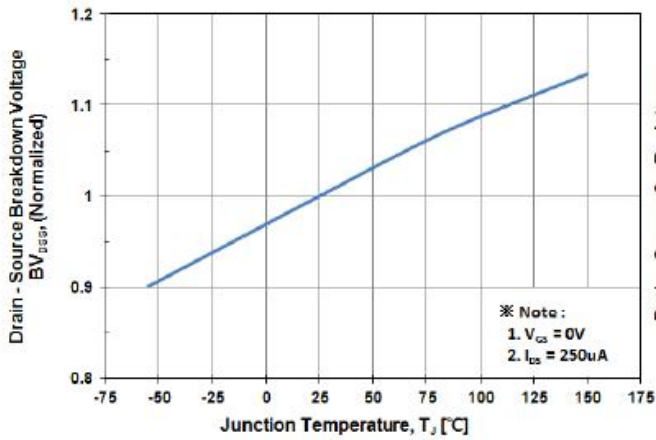


Fig. 8 On-Resistance Variation vs. Temperature

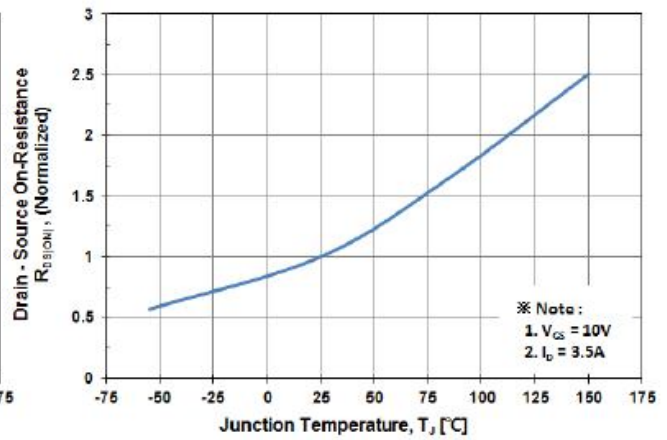


Fig. 9 Maximum Drain Current vs. Case Temperature

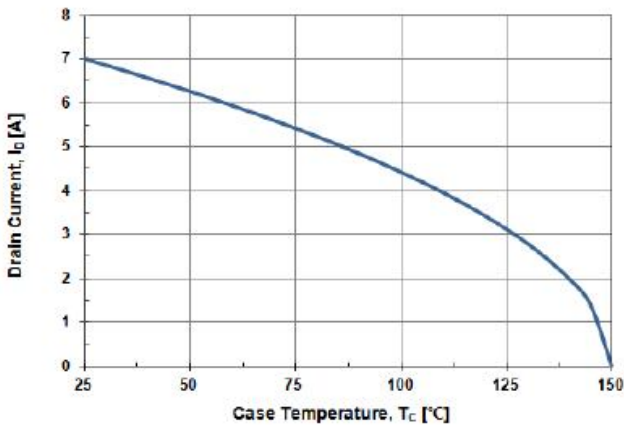


Fig. 10 Maximum Safe Operating Area

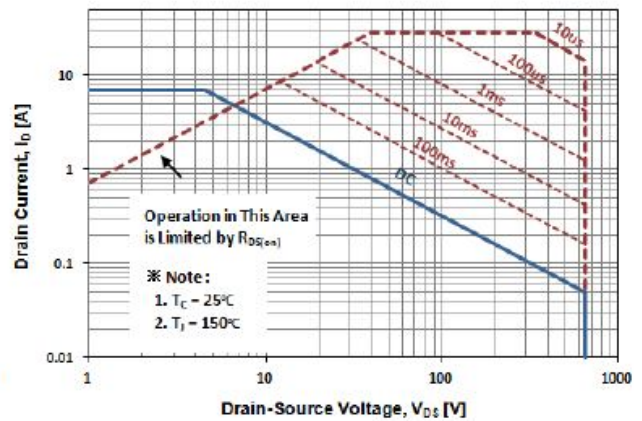


Fig. 11 Transient Thermal Impedance

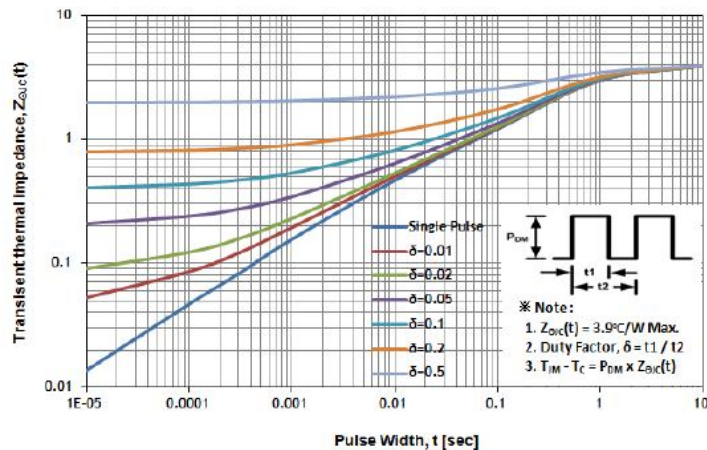


Fig. 12 Gate Charge Test Circuit & Waveform

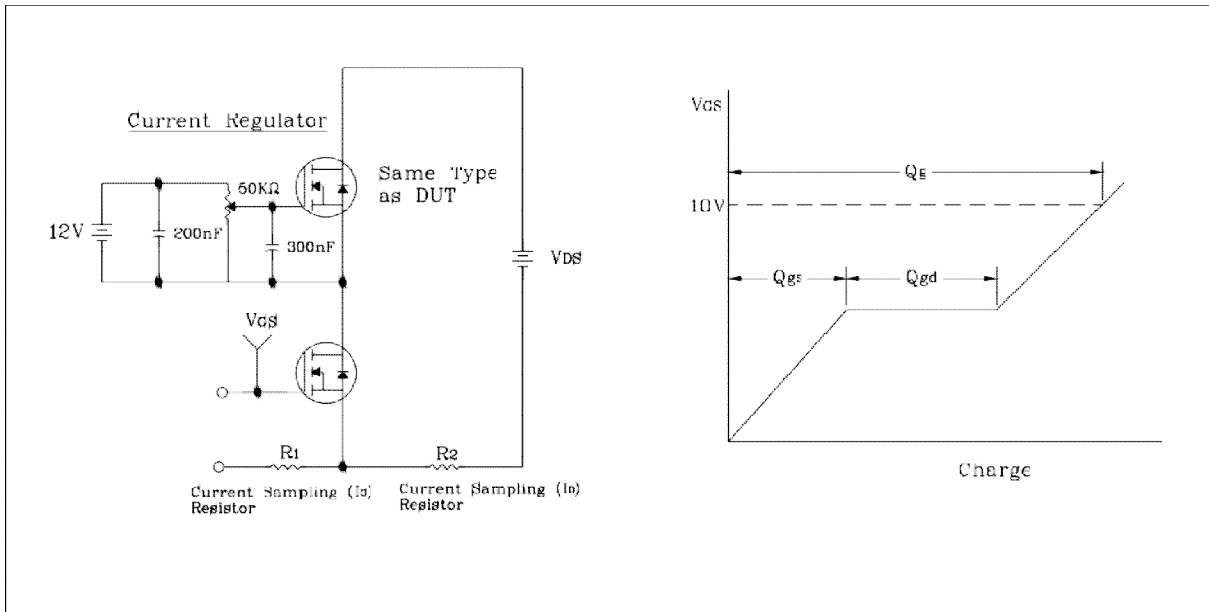


Fig. 13 Resistive Switching Test Circuit & Waveform

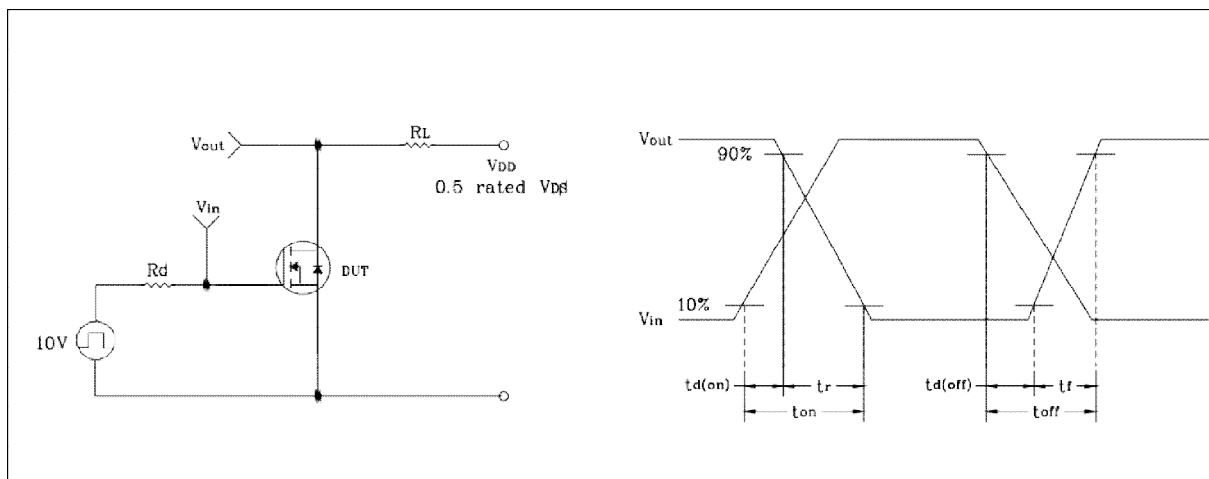


Fig. 14 E_{AS} Test Circuit & Waveform

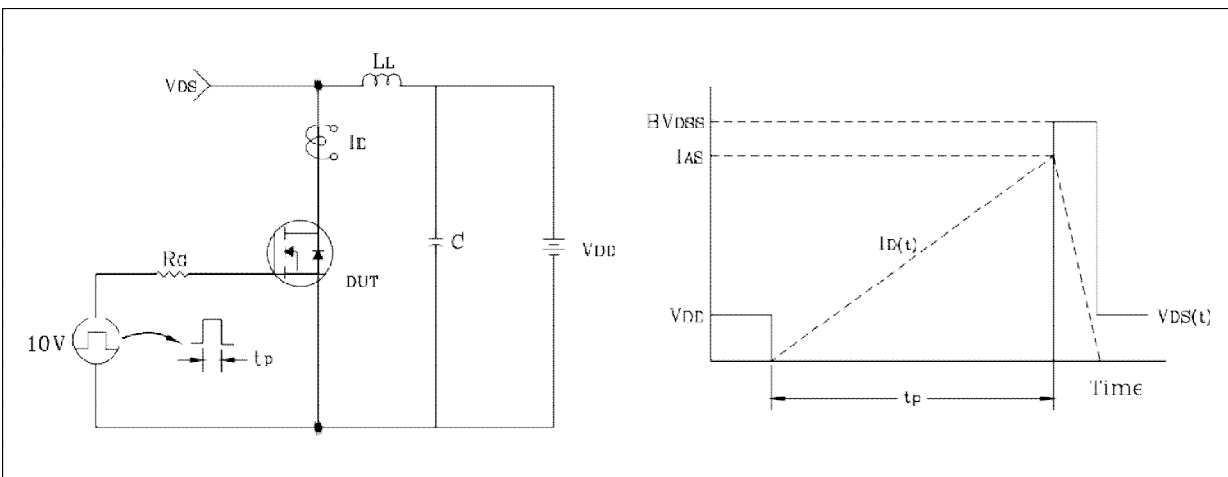
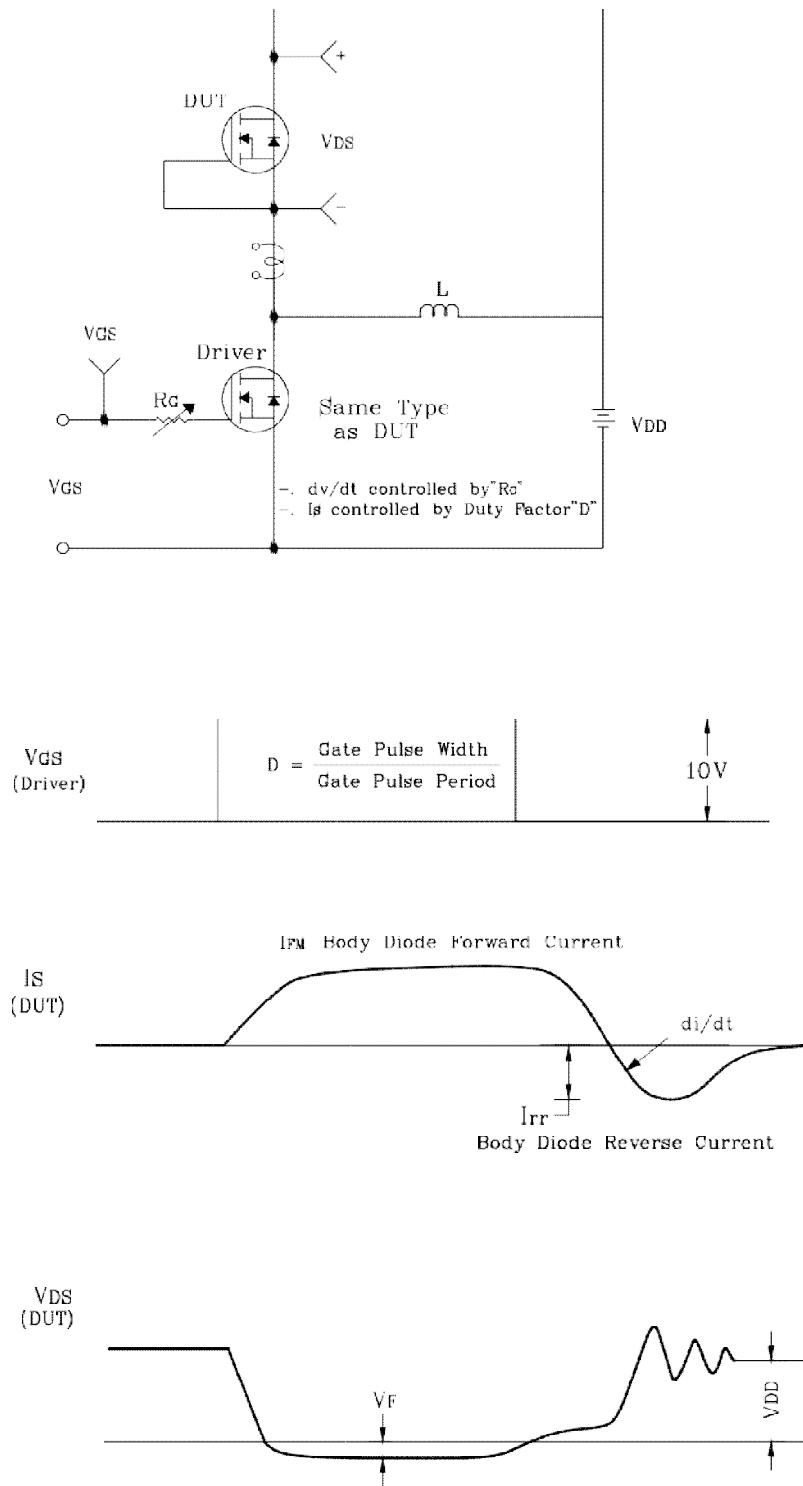


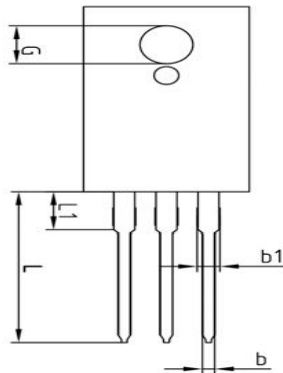
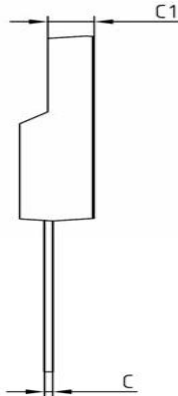
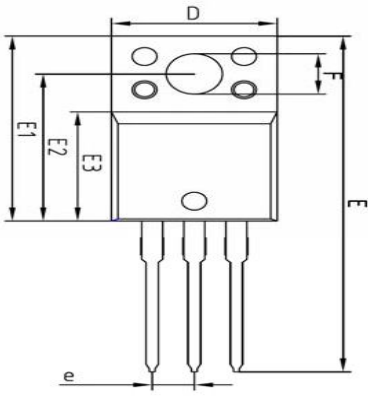
Fig. 15 Diode Reverse Recovery Time Test Circuit & Waveform



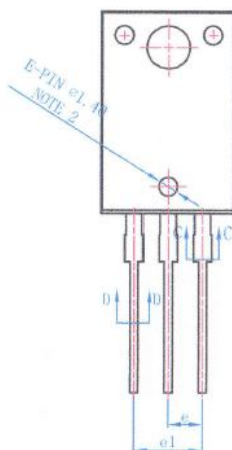
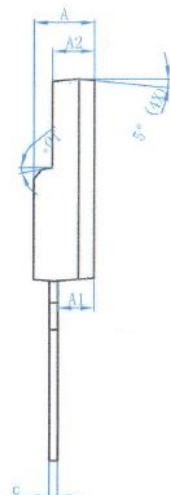
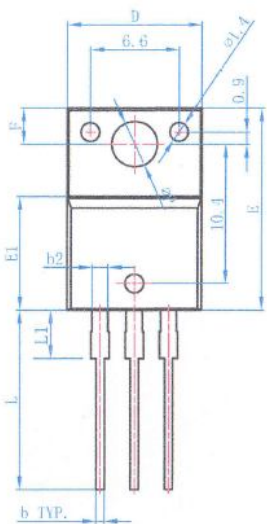
KRK0765F/FA

Outline Dimension

unit: mm

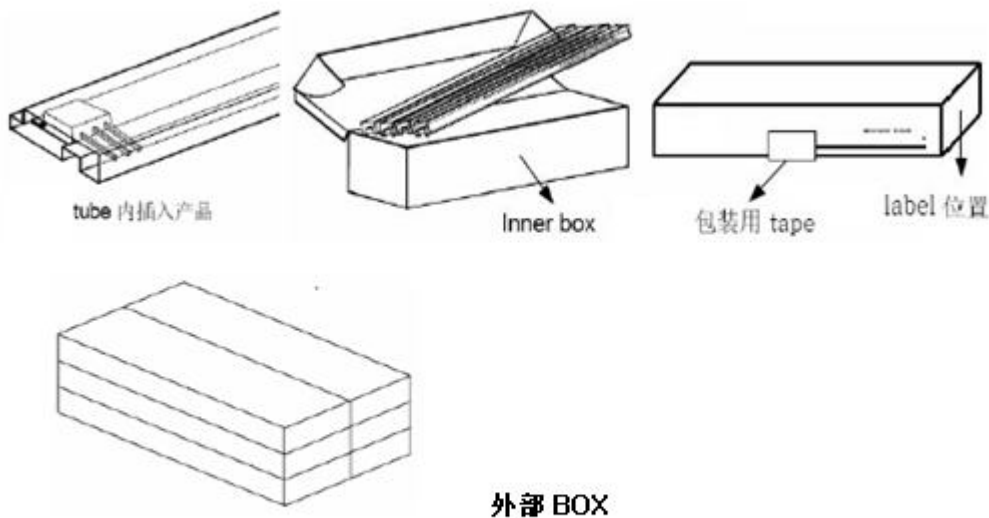


SYMBOL	MILLIMETERS			NOTE
	MINIMUM	NOMINAL	MAXIMUM	
A	—	—	4.60	
A1	2.45	2.50	2.55	
A2	1.95	2.00	2.05	
b	0.65	0.75	0.85	
b1	1.07	1.27	1.47	
C	0.40	0.50	0.60	
C1	2.70	2.80	2.90	
D	9.90	10.00	10.10	
E	28.00	—	28.60	
E1	15.50	15.60	15.70	
E2	12.30	12.40	12.50	
E3	9.15	9.20	9.25	
F	3.30	3.40	3.50	
G	3.10	3.20	3.30	
e	2.54 BSC			
L	12.40	—	13.00	
L1	3.46 BSC			



SYMBOLS	DIMENSIONS IN MILLIMETERS			DIMENSIONS IN INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	4.20	4.50	4.80	0.165	0.177	0.189
A1	2.50	—	2.90	0.098	—	0.114
A2	2.90	3.10	3.30	0.114	0.122	0.130
b	0.30	0.60	0.90	0.012	0.024	0.035
b1	0.30	—	0.90	0.012	—	0.035
b2	1.00	1.20	1.40	0.039	0.047	0.055
b3	1.00	—	1.40	0.039	—	0.055
c	—	0.60	—	—	0.024	—
D	9.90	10.00	10.10	0.390	0.394	0.398
E	14.80	15.10	15.40	0.583	0.594	0.606
E1	8.40	8.50	8.60	0.331	0.335	0.339
e	—	2.55BSC		—	0.100BSC	
e1	—	5.10BSC		—	0.200BSC	
F	2.55	2.70	2.85	—	0.106	0.112
L	13.00	13.40	13.80	0.512	0.528	0.543
L1	3.45	3.60	3.75	0.136	0.142	0.148
eP	2.90	3.20	3.50	0.114	0.126	0.138

Packing Spec



PKG	个/TUBE	TUBE/内部 BOX	个/内部 BOX	个/外部 BOX
TO220F	50	20	1,000	6,000

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