

产品规格书

批准	审核	校核	编制
纪春华	朴致均	赵宇辉	郑羿
2019.07.16	2019.07.16	2019.07.16	2019.07.16

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	2019.07.16	郑羿

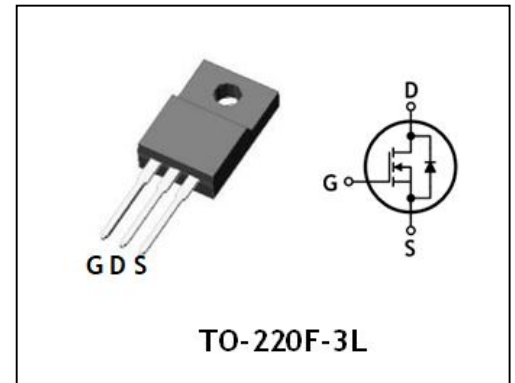
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0755-23073210
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Features:

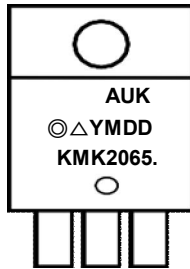
- Fast Switching
- Low ON Resistance ($R_{ds(on)} \leq 0.4\Omega$)
- Low Gate Charge (Typical Data: 53nC)
- Low Reverse transfer capacitances (Typical: 14.3pF)
- 100% Single Pulse avalanche energy Test

Ordering Information

Part Number	Marking	Package
KMK2065FCA	KMK2065.	TO-220F-3L



Marking Information



Column 1: Manufacturer
Column 2: Production Information e.g.)

◎△YMDD

- ◎△: Factory Management Code
- YMDD: Date Code (Year, Month, Daily)

Column 3: Device Code . Dalian

Absolute (Tc=25°C unless otherwise specified):

Symbol	Parameter	Rating	Units
V _{DSS}	Drain-to-Source Voltage	650	V
I _D	Continuous Drain Current	20	A
	Continuous Drain Current T _C =100 °C	14	A
I _{DM} ^{a1}	Pulsed Drain Current	80	A
V _{GS}	Gate-to-Source Voltage	±30	V
E _{AS} ^{a2}	Single Pulse Avalanche Energy	1200	mJ
E _{AR} ^{a1}	Avalanche Energy ,Repetitive	100	mJ
I _{AR} ^{a1}	Avalanche Current	4.5	A
dv/dt ^{a3}	Peak Diode Recovery dv/dt	5.0	V/ns
P _D	Power Dissipation	85	W
	Derating Factor above 25 °C	0.68	W/°C
T _J , T _{stg}	Operating Junction and Storage Temperature Range	150, -55 to 150	°C
T _L	Maximum Temperature for Soldering	300	°C

Caution Stresses greater than those in the "Absolute Maximum Ratings" may cause permanent damage to the device

Thermal Characteristics

Symbol	Parameter	Rating	Units
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case	1.47	$^{\circ}\text{C}/\text{W}$
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	100	$^{\circ}\text{C}/\text{W}$

Electrical Characteristics (Tc= 25°C unless otherwise specified):

OFF Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
V_{DSS}	Drain to Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	650	--	--	V
$\Delta BV_{DSS}/\Delta T_J$	Bvdss Temperature Coefficient	$I_D=250\mu A, \text{Reference } 25^{\circ}\text{C}$	--	0.65	--	$\text{V}/^{\circ}\text{C}$
I_{DSS}	Drain to Source Leakage Current	$V_{DS}=650V, V_{GS}=0V, T_a=25^{\circ}\text{C}$	--	--	1.0	μA
		$V_{DS}=520V, V_{GS}=0V, T_a=125^{\circ}\text{C}$	--	--	100	
$I_{GSS(F)}$	Gate to Source Forward Leakage	$V_{GS}=+30V$	--	--	100	nA
$I_{GSS(R)}$	Gate to Source Reverse Leakage	$V_{GS}=-30V$	--	--	-100	nA

ON Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
$R_{DS(ON)}$	Drain-to-Source On-Resistance	$V_{GS}=10V, I_D=10A$	--	0.35	0.40	Ω
$V_{GS(TH)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	2.0	--	4.0	V
g_{fs}	Forward Trans conductance	$V_{DS}=15V, I_D=10A$	--	17	--	S

Pulse width<380 μ s; duty cycle<2%.

Dynamic Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
C_{iss}	Input Capacitance	$V_{GS}=0V, V_{DS}=25V$ $f=1.0\text{MHz}$	--	2850	--	pF
C_{oss}	Output Capacitance		--	225	--	
C_{rss}	Reverse Transfer Capacitance		--	14.3	--	

Resistive Switching Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
$t_{d(ON)}$	Turn-on Delay Time	$I_D=20A, V_{DD}=300V, R_g=25\Omega$	--	36	--	ns
t_r	Rise Time		--	73	--	
$t_{d(OFF)}$	Turn-Off Delay Time		--	166	--	
t_f	Fall Time		--	73	--	
Q_g	Total Gate Charge	$I_D=20A, V_{DD}=300V, V_{GS}=10V$	--	53	--	nC
Q_{gs}	Gate to Source Charge		--	15.5	--	
Q_{gd}	Gate to Drain (" Miller ")Charge		--	10.3	--	

Source-Drain Diode Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
I_{SD}	Continuous Source Current (Body Diode)		--	--	20	A
I_{SM}	Maximum Pulsed Current (Body Diode)		--	--	80	A
V_{SD}	Diode Forward Voltage	$I_S=20A, V_{GS}=0V$	--	--	1.5	V
t_{rr}	Reverse Recovery Time	$I_S=20A, T_J=25^\circ C$	--	425	--	ns
Q_{rr}	Reverse Recovery Charge	$dI_F/dt=100A/\mu s, V_{GS}=0V$	--	3.7	--	μC

a1: Repetitive rating; pulse width limited by maximum junction temperature

a2: $L=10mH, I_D=15.5A, \text{Start } T_J=25^\circ C$

a3: $I_{SD}=20A, di/dt \leq 200A/\mu s, V_{DD} \leq BV_{DS}, \text{Start } T_J=25^\circ C$

Characteristics Curve:

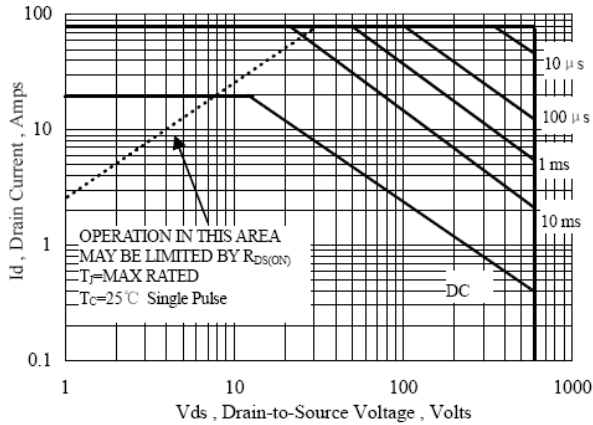


Figure 1 Maximum Forward Bias Safe Operating Area

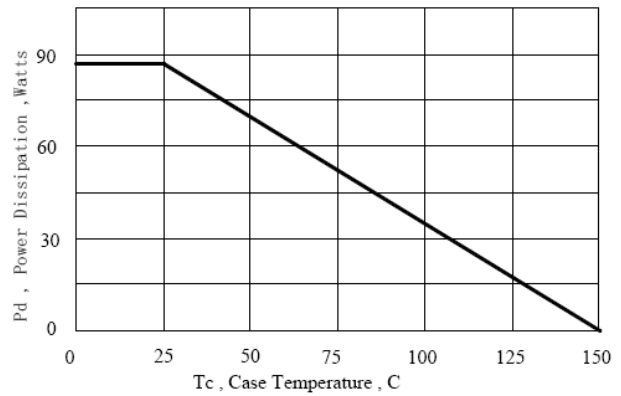


Figure 2 Maximum Power Dissipation vs Case Temperature

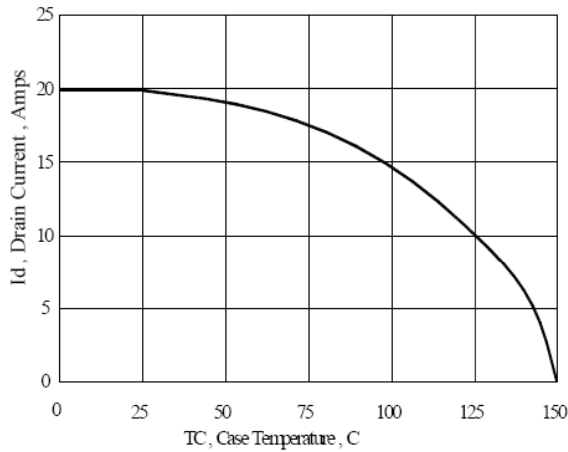


Figure 3 Maximum Continuous Drain Current vs Case Temperature

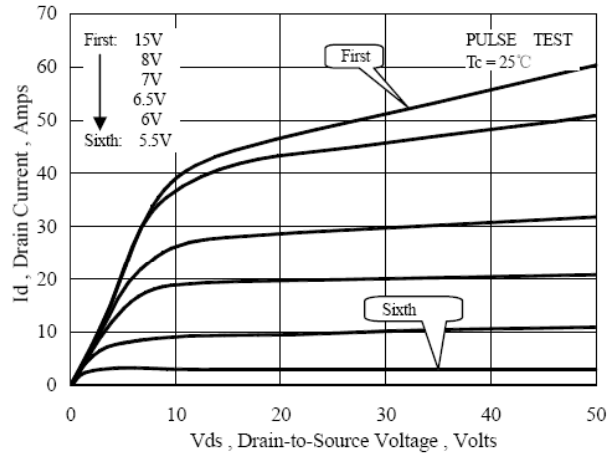


Figure 4 Typical Output Characteristics

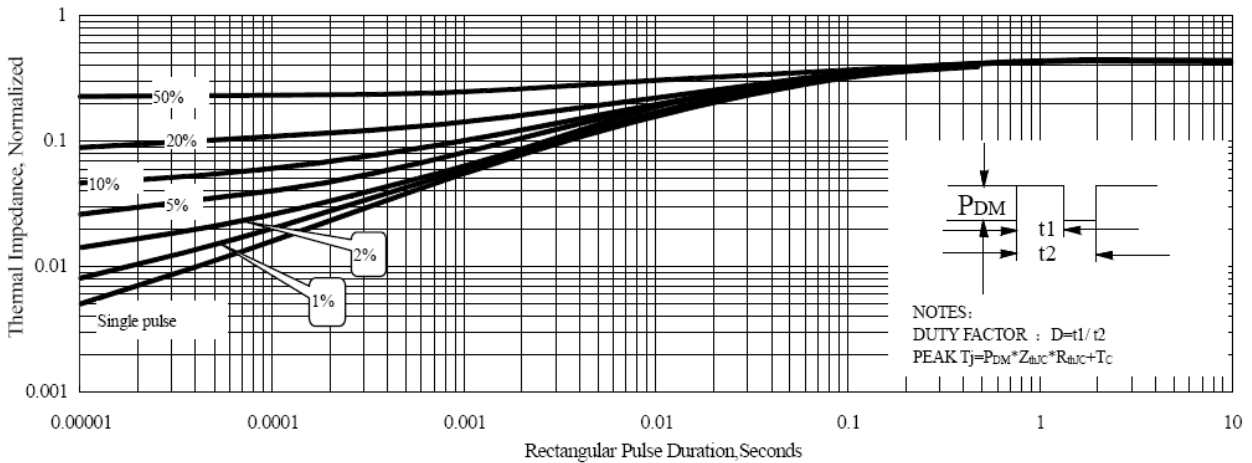


Figure 5 Maximum Effective Thermal Impedance, Junction to Case

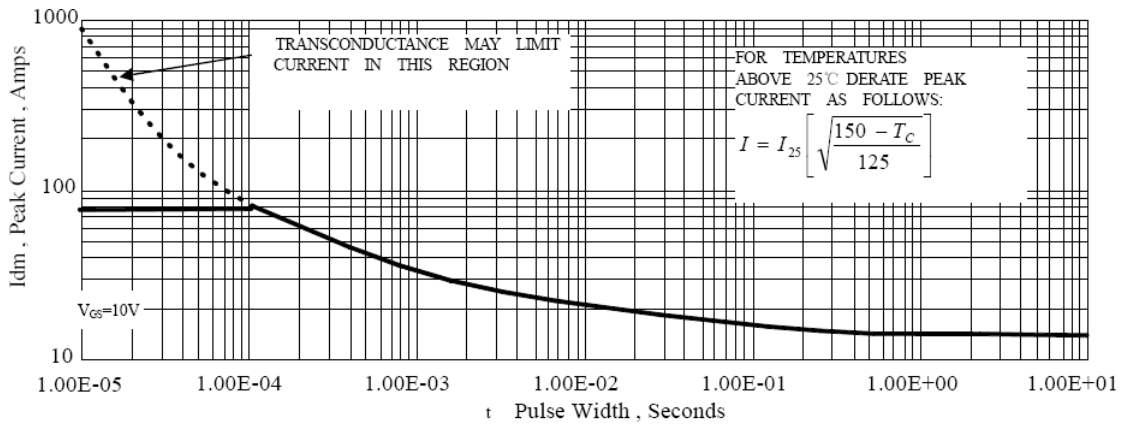


Figure 6 Maximum Peak Current Capability

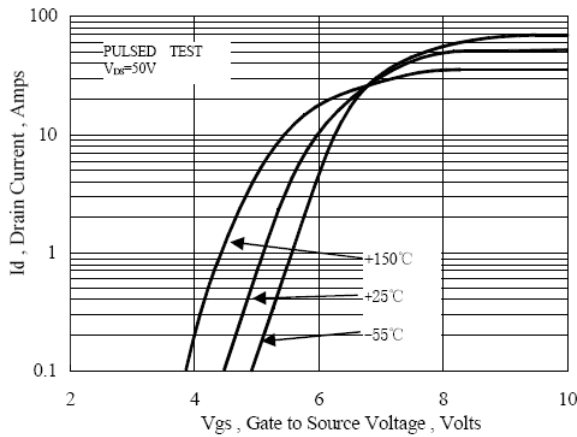


Figure 7 Typical Transfer Characteristics

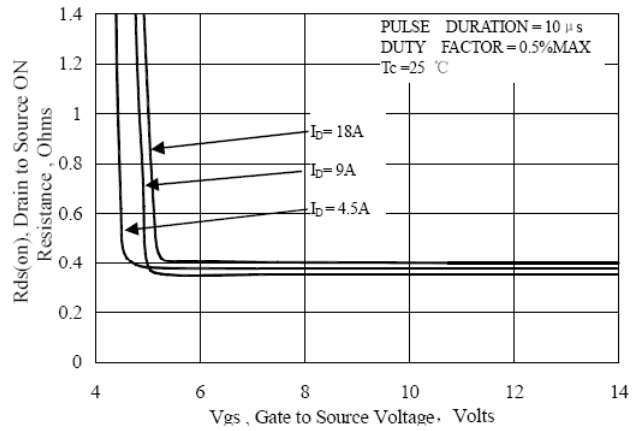


Figure 8 Typical Drain to Source ON Resistance vs Gate Voltage and Drain Current

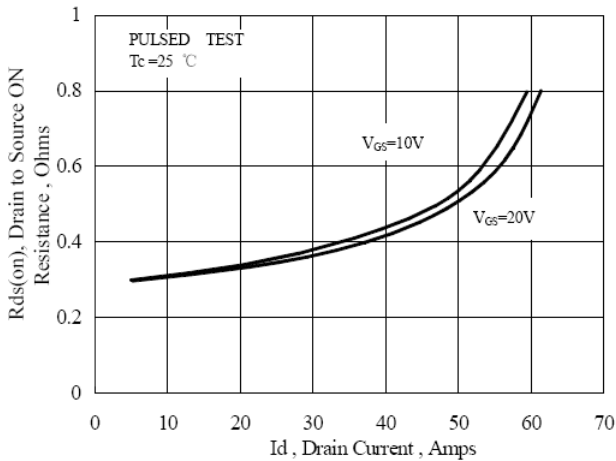


Figure 9 Typical Drain to Source ON Resistance vs Drain Current

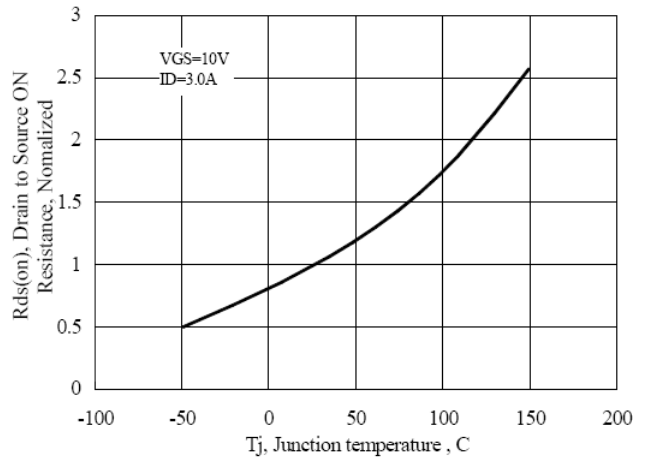


Figure 10 Typical Drain to Source ON Resistance vs Junction Temperature

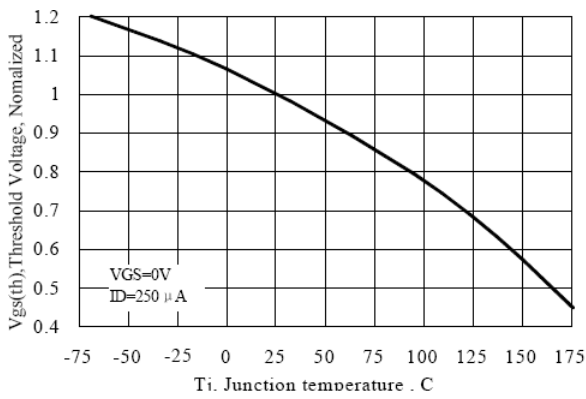


Figure 11 Typical Threshold Voltage vs Junction Temperature

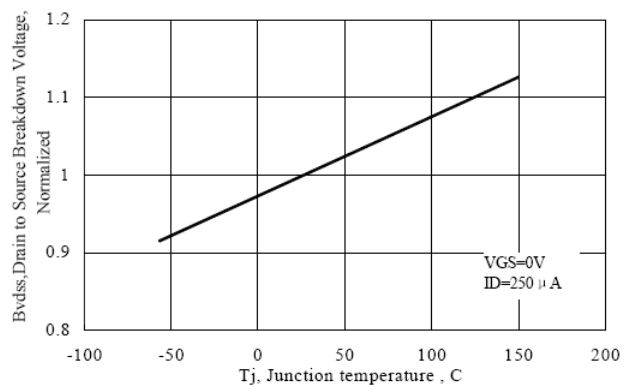


Figure 12 Typical Breakdown Voltage vs Junction Temperature

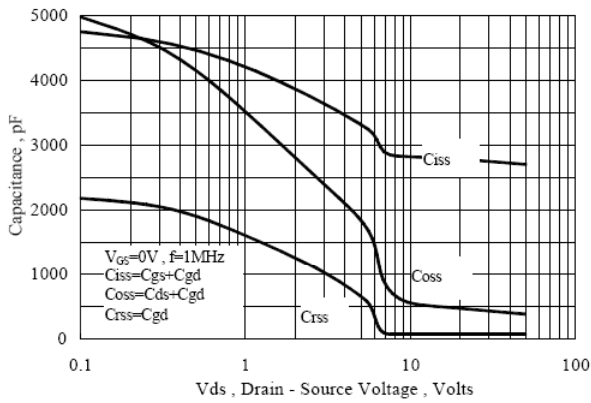


Figure 13 Typical Capacitance vs Drain to Source Voltage

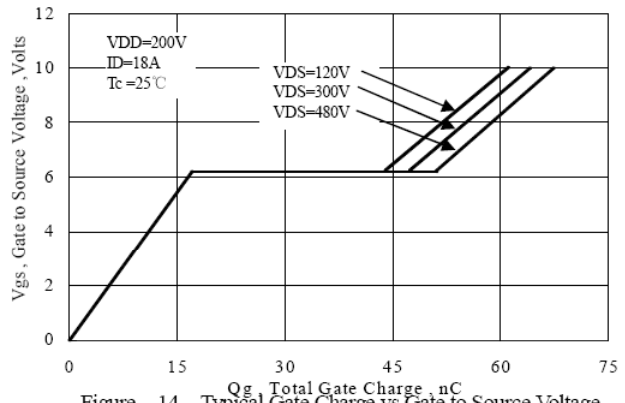


Figure 14 Typical Gate Charge vs Gate to Source Voltage

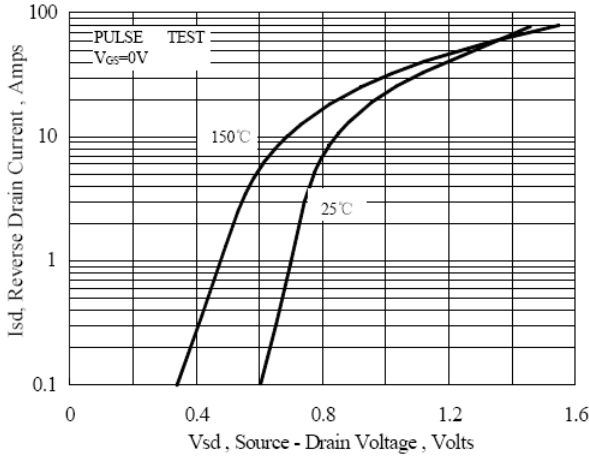


Figure 15 Typical Body Diode Transfer Characteristics

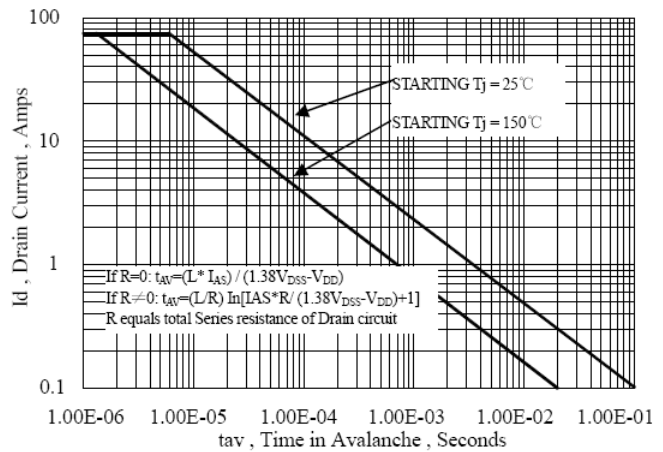
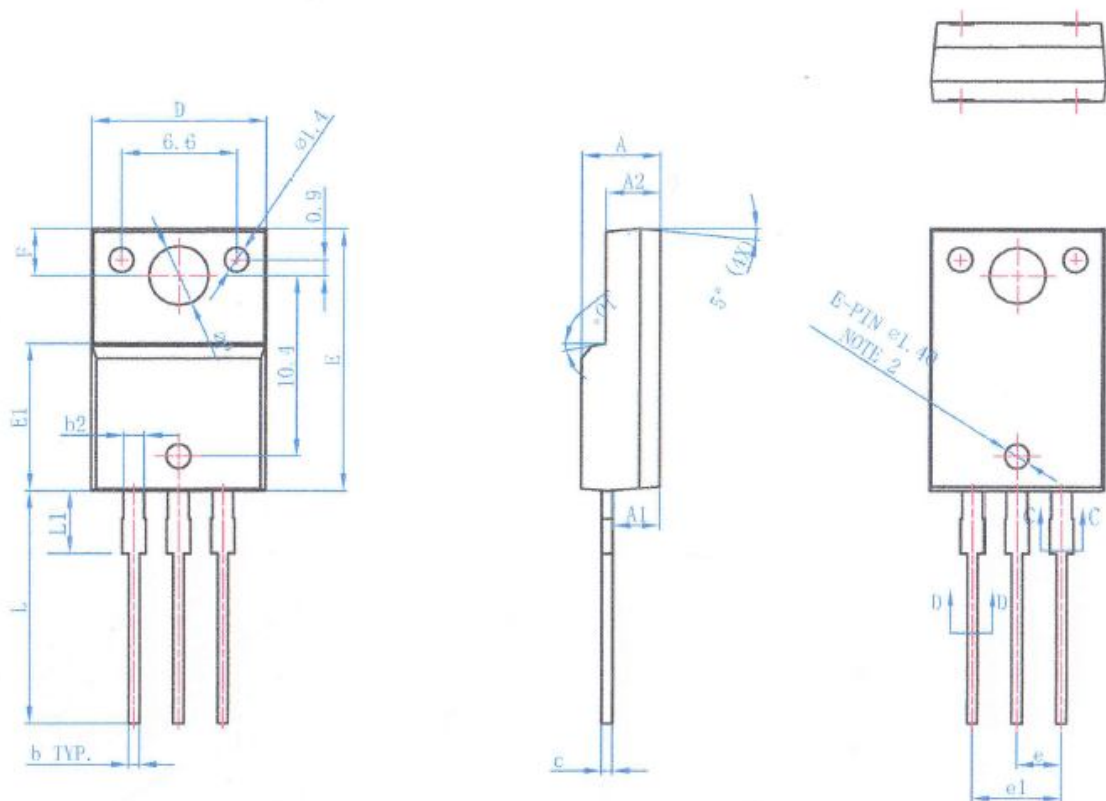


Figure 16 Unclamped Inductive Switching Capability

Outline Dimension

unit: mm



SYMBOLS	DIMENSIONS IN MILLIMETERS			DIMENSIONS IN INCHS		
	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

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