快捷芯
KUAIJIEXIN

KJ50P10C/D

P-Channel Enhancement Mode MOSFET

1. Product Information

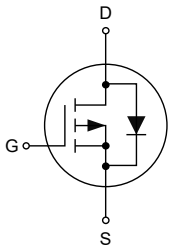
1.1 Features

Advanced Trench Technology

Low gate charge

Excellent $R_{DS(ON)}$

Symbol



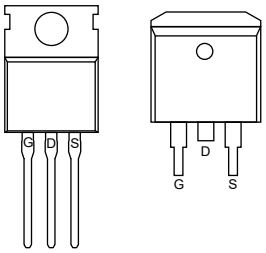
1.2 Applications

Brushless motor

Uninterruptible power supply

Load switch

Simplified Outline



1.3 Quick reference

V_{DS} = -100V

I_D = -50A

$R_{DS(ON)}$ ≦ 52mΩ@V_{GS} = 10V (Type: 40mΩ)

2. Package Marking and Ordering Information

Product Name	Package	Marking	Reel Size	Tape width	Quantity
KJ50P10C	TO-220	50P10 YWWXXX YWWXXX: Date Code	-	-	1000
KJ50P10D	TO-263		-	-	800

3. Absolute Maximum Ratings (T_C=25℃ unless otherwise noted)

Symbol	Parameter	Min	Max	Unit
V_{DS}	Drain-Source Voltage	-100	-	V
V_{GS}	Gate-Source Voltage	-	±20	V
I_D [1]	Continuous Drain Current, V_{GS} @ -10V	-	-50	A
	Continuous Drain Current, V_{GS} @ -100V	-	-28	A
I_{DM} [2]	Pulsed Drain Current	-	-150	A
E_{AS} [3]	Single Pulsed Avalanche Energy	-	87	mJ
P_{tot} [4]	Total Power Dissipation	-	140	W
T_{stg}	Storage Temperature	-55	150	℃
T_J	Junction Temperature	-	150	℃
$R_{\theta JA}$[1]	Thermal Resistance-Junction to ambient	-	62	℃/W
$R_{\theta JC}$[1]	Thermal Resistance-Junction to Case	-	1.1	℃/W

4. Electrical Characteristics (T_J=25℃, unless otherwise noted)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=-250μA	-100	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=-100V, V_{GS}=0V,	-	-	-1	μA
I_{GSS}	Gate to Body Leakage Current	V_{DS}=0V, V_{GS}=±20V	-	-	±100	nA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=-250μA	-1	-1.6	-2.5	V
$R_{DS(ON)}$	Static Drain-Source on-Resistance	V_{GS}=-10V, I_D=-20A	-	40	52	mΩ
$R_{DS(ON)}$	Static Drain-Source on-Resistance	V_{GS}=-4.5V, I_D=-10A	-	44	62	mΩ
C_{iss}	Input Capacitance	V_{DS}=-50V, V_{GS}=0V, f=1.0MHz	-	2120	-	pF
C_{oss}	Output Capacitance		-	194	-	pF
C_{rss}	Reverse Transfer Capacitance		-	13	-	pF
Q_g	Total Gate Charge	V_{DS}=-50V, I_D=-5A, V_{GS}=-10V	-	40	-	nC
Q_{gs}	Gate-Source Charge		-	7.8	-	nC
Q_{gd}	Gate-Drain(“Miller”) Charge		-	8.6	-	nC
$t_{d(on)}$	Turn-on Delay Time	V_{DD}=-50V, I_D=-5A, R_G=6Ω, V_{GS}=-10V	-	13	-	ns
t_r	Turn-on Rise Time		-	39	-	ns
$t_{d(off)}$	Turn-off Delay Time		-	100.1	-	ns
t_f	Turn-off Fall Time		-	105.3	-	ns
I_S	Maximum Continuous Drain to Source Diode Forward Current		-	-	-35	A
I_{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	-140	A
V_{SD}	Drain to Source Diode Forward Voltage	V_{GS}=0V, I_S=-30A	-	-	-1.2	V
t_{rr}	Body Diode Reverse Recovery Time	T_J=25℃, I_F=-5A, dI/dt=100A/μs	-	104	-	ns
Qrr	Body Diode Reverse Recovery Charge		-	280	-	nC

Note:

1. The data tested by surface mounted on a 1 inch^2 FR-4 board with 2OZ copper.
2. The data tested by pulsed , pulse width ≦ 300μs , duty cycle ≦ 2%.
3. The E_{AS} data shows Max. rating. The test condition is V_{DD}=-25V, V_{GS}=-10V, L=0.1mH, I_{AS}=-24A.
4. The power dissipation is limited by 150℃ junction temperature.
5. The data is theoretically the same as I_D and I_{DM}, in real applications, should be limited by total power dissipation.

5. Typical Characteristics

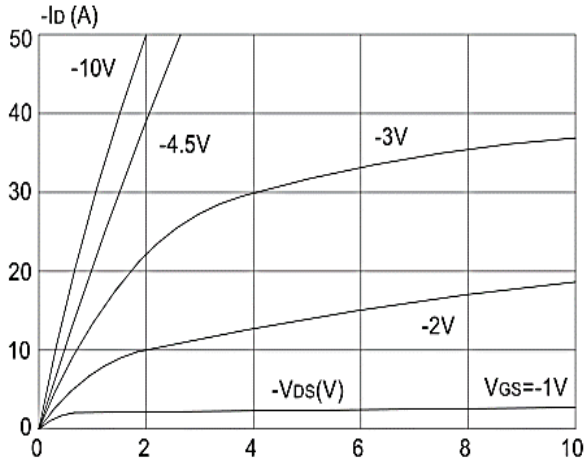


Figure 1: Output Characteristics

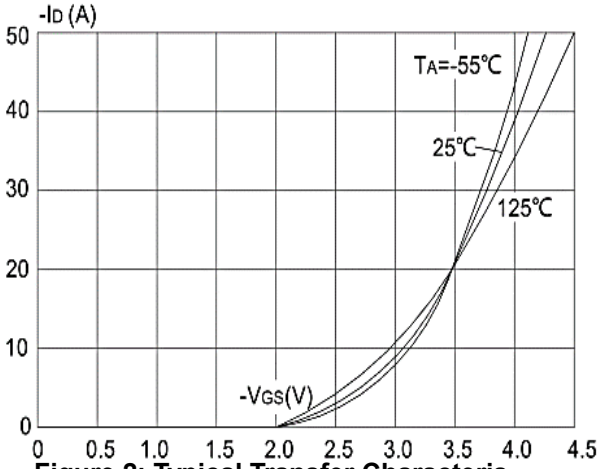


Figure 2: Typical Transfer Characteris

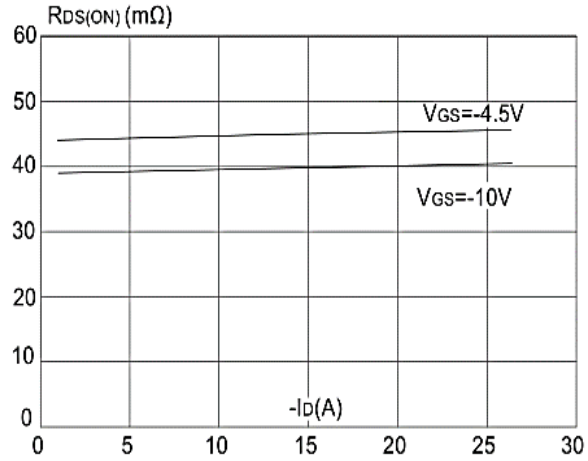


Figure 3: On-resistance vs. Drain Current

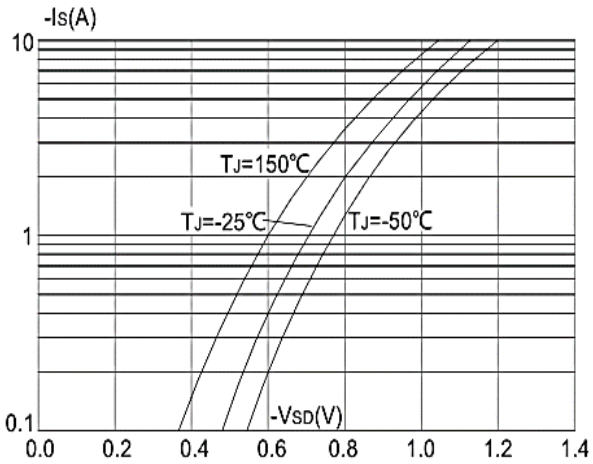


Figure 4: Body Diode Characteristics

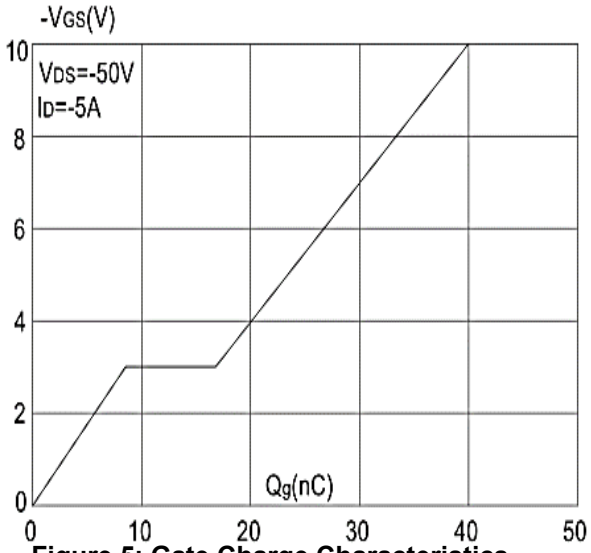


Figure 5: Gate Charge Characteristics

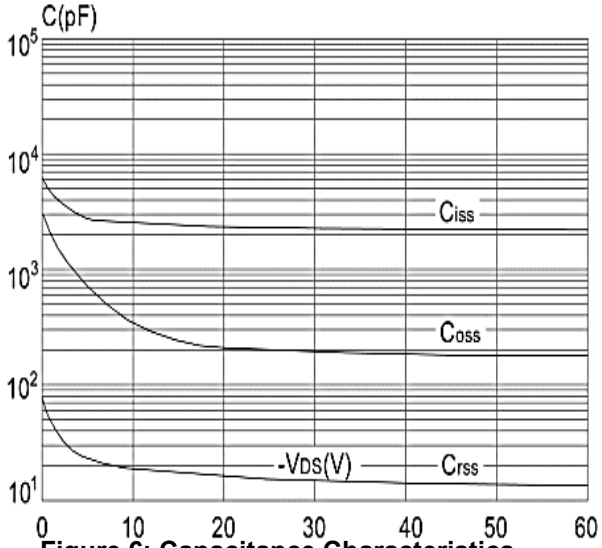


Figure 6: Capacitance Characteristics

5. Typical Characteristics(cont.)

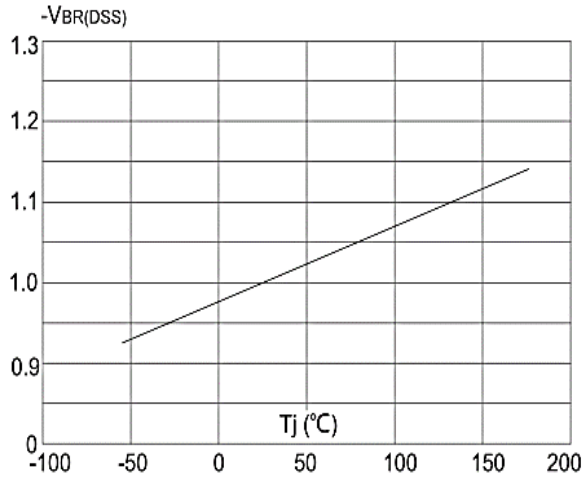


Figure 7: Normalized Breakdown Voltage vs Junction Temperature

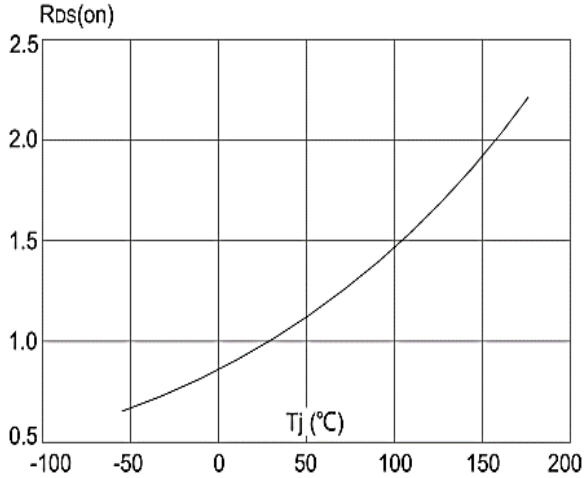


Figure 8: Normalized on Resistance vs. Junction Temperature

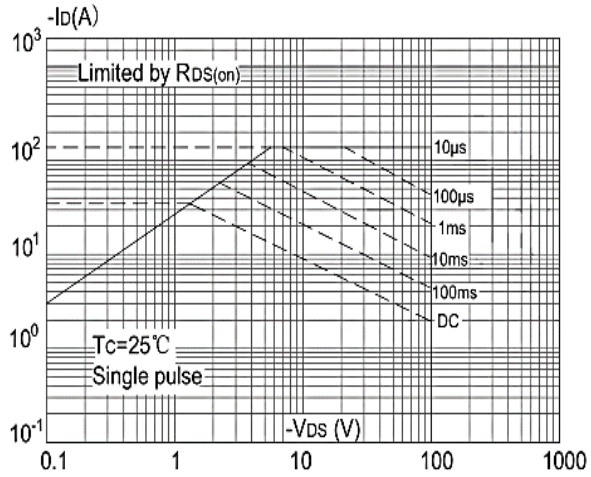


Figure 9: Maximum Safe Operating Area

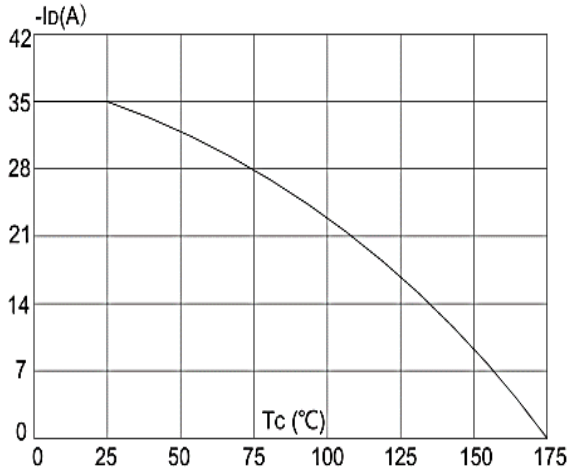


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

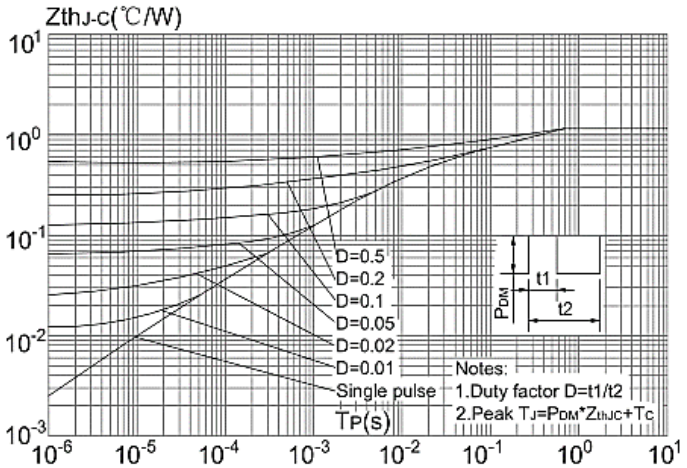
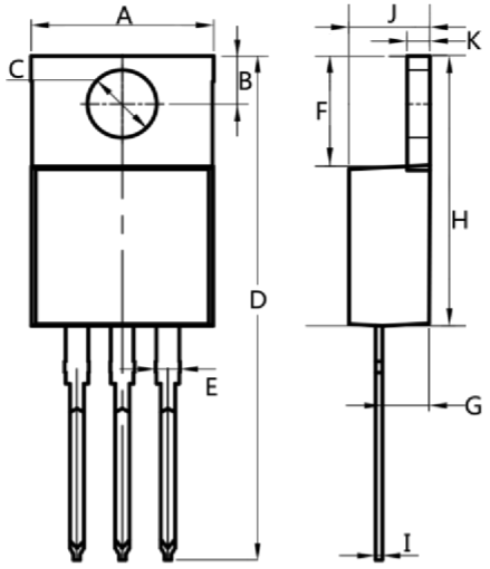


Figure 11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambien

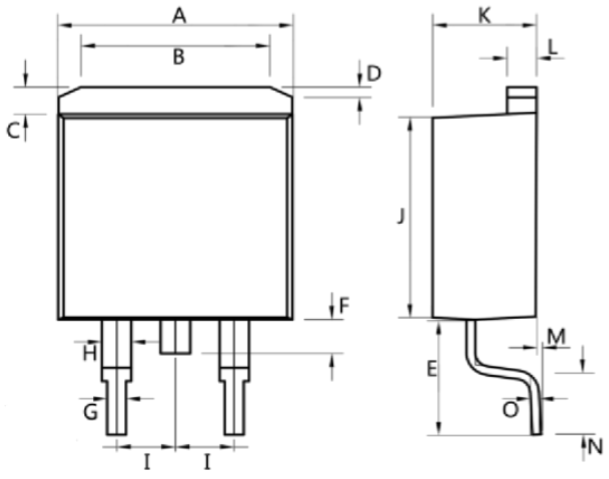
5. Package Mechanical Data

TO-220 Package



Dim.	Min.	Max.
A	10.0	10.4
B	2.5	3.0
C	3.5	4.0
D	28.0	30.0
E	1.1	1.5
F	6.2	6.6
G	2.9	3.3
H	15.0	16.0
I	0.35	0.45
J	4.3	4.7
K	1.2	1.4
All Dimensions in millimeter		

TO-263 Package



Dim.	Min.	Max.
A	10.0	10. 5
B	7.25	7.75
C	1.3	1.5
D	0.55	0.75
E	5.0	6.0
F	1.4	1.6
G	0.75	0.95
H	1.15	1.35
I	Typ 2.54	
J	8.4	8.6
K	4.4	4.6
L	1.25	1.45
M	0.02	0.1
N	2.4	2.8
O	0.35	0.45
All Dimensions in millimeter		