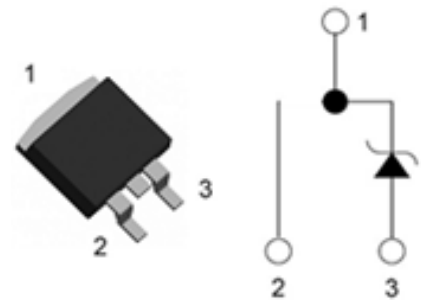


## Product Summary

$V_R = 650\text{ V}$   
 $I_F = 10\text{ A (}T_C=150^\circ\text{C)}$   
 $Q_c = 23\text{ nC (}V_R=400\text{V)}$



**D<sup>2</sup>PAK**  
TO-263-2L

## Features

- Zero Forward/Reverse Recovery Current
- High Blocking Voltage
- High Frequency Operation
- Positive Temperature Coefficient on  $V_F$
- Temperature Independent Switching Behavior
- High surge current capability

## Benefits

- Higher System Efficiency
- Parallel Device Convenience without thermal runaway
- Higher Temperature Application
- No Switching loss
- Hard Switching & Higher Reliability
- Environmental Protection

## Applications

- Motor Drives
- Solar
- AC/DC converters
- DC/DC converters
- Uninterruptable power supplies

## Maximum Ratings ( $T_C=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Test conditions	Value	Unit
Peak Repetitive Reverse Voltage	$V_{RRM}$		650	V
Peak Reverse Surge Voltage	$V_{RSM}$		650	V
DC Blocking Voltage	$V_R$		650	V
Continuous Forward Current	$I_F$	$T_C=25^\circ\text{C}$	32	A
		$T_C=135^\circ\text{C}$	14	
		$T_C=150^\circ\text{C}$	10	
Non repetitive Forward Surge Current	$I_{FSM}$	$T_C = 25^\circ\text{C}$ , $t_p=10\text{ ms}$ , Half Sine Pulse	65	A
		$T_C = 110^\circ\text{C}$ , $t_p=10\text{ ms}$ , Half Sine Pulse	55	
		$T_C = 25^\circ\text{C}$ , $t_p=10\text{ }\mu\text{s}$ , Square	520	
Repetitive peak Forward Surge Current	$I_{FRM}$	$T_C = 25^\circ\text{C}$ , $t_p=10\text{ ms}$ , Freq = 0.1Hz, 100 cycles, Half Sine Pulse	55	A
		$T_C = 110^\circ\text{C}$ , $t_p=10\text{ ms}$ , Freq = 0.1Hz, 100 cycles, Half Sine Pulse	45	
Total power dissipation	$P_D$	$T_C=25^\circ\text{C}$	94	W
Operating Junction Temperature	$T_J$		-55 to 175	$^\circ\text{C}$
Storage Temperature	$T_{STG}$		-55 to 175	$^\circ\text{C}$

## Electrical Characteristics

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
DC Blocking Voltage	$V_{DC}$	$I_R = 250\mu A, T_J = 25^\circ C$	650			V
Forward Voltage	$V_F$	$I_F = 10A, T_J = 25^\circ C$		1.45	1.8	V
		$I_F = 10A, T_J = 125^\circ C$		1.6		
		$I_F = 10A, T_J = 175^\circ C$		1.7		V
Reverse Current	$I_R$	$V_R = 650V, T_J = 25^\circ C$		12	80	$\mu A$
		$V_R = 650V, T_J = 125^\circ C$		68		$\mu A$
		$V_R = 650V, T_J = 175^\circ C$		190		$\mu A$
Total Capacitive Charge	$Q_C$	$V_R = 400V, I_F = 10A, di/dt = 200A/\mu s, T_J = 25^\circ C$		23		nC
Total Capacitance	C	$V_R = 1V, T_J = 25^\circ C, Freq = 1MHz$		380		pF
		$V_R = 200V, T_J = 25^\circ C, Freq = 1MHz$		48		
		$V_R = 400V, T_J = 25^\circ C, Freq = 1MHz$		31		

Note: This is a majority carrier diode, so there is no reverse recovery charge

## Thermal Characteristics

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Thermal Resistance	$R_{th(j-c)}$	junction-case		1.6		$^\circ C/W$

## Typical Electrical Curves

Figure 1. Forward Characteristics

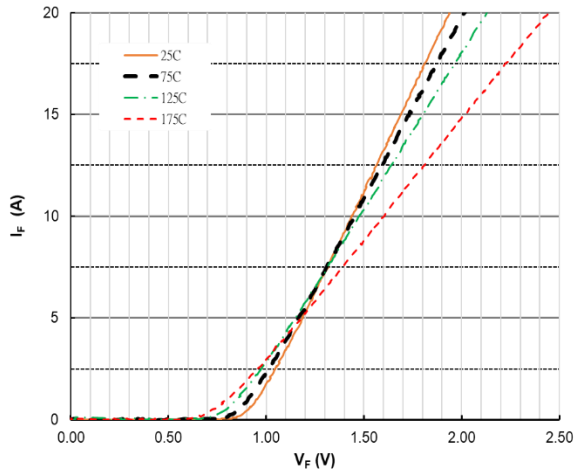


Figure 2. Forward Characteristics

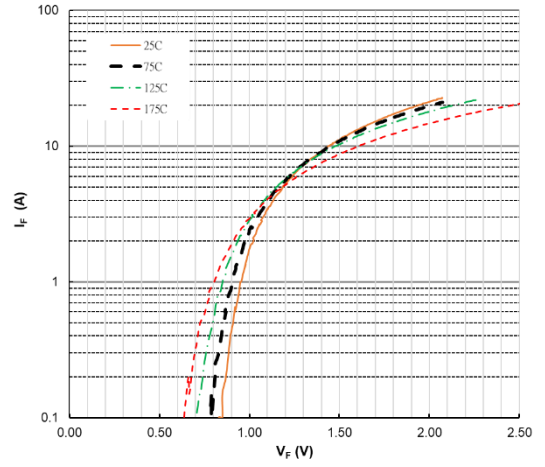


Figure 3. Reverse Characteristics

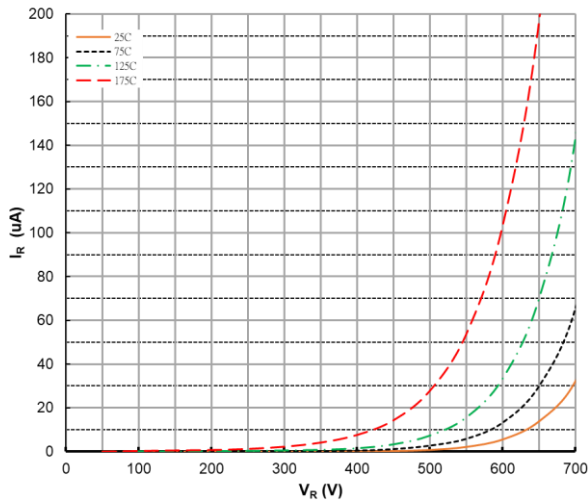


Figure 4. Power Derating

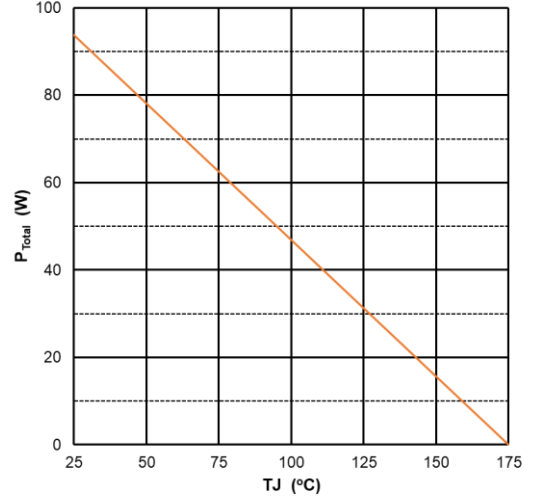


Figure 5. Capacitance vs Reverse Voltage

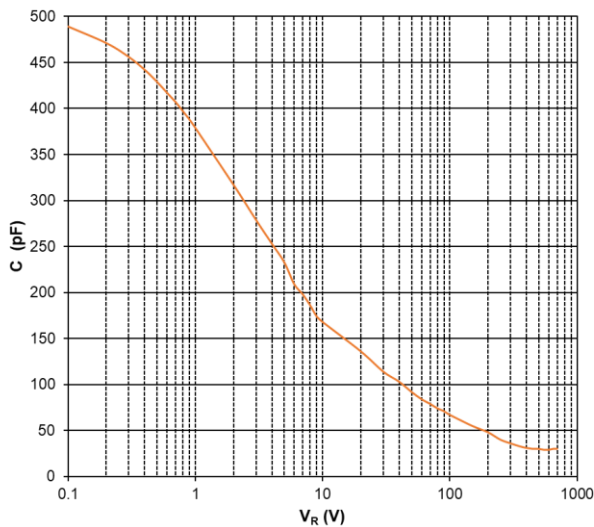
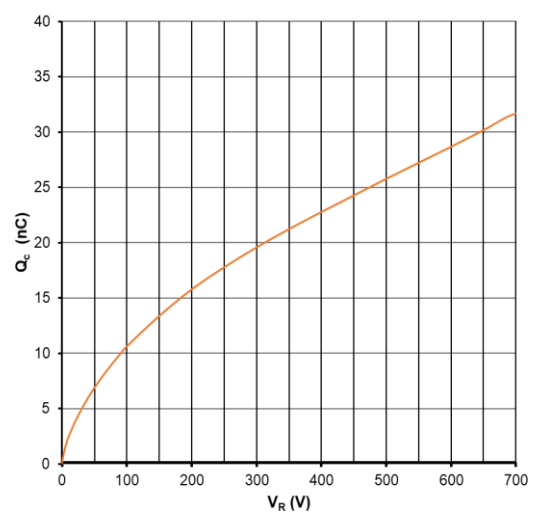
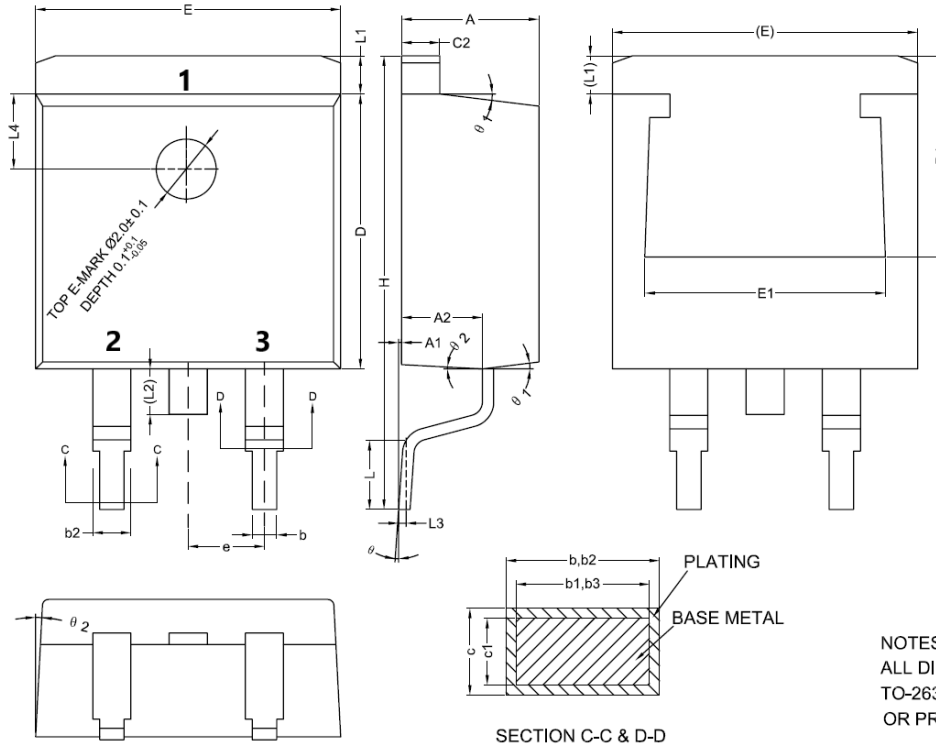


Figure 6. Recovery Charge vs Reverse Voltage



## Package Dimensions

(D<sup>2</sup>PAK Package)



COMMON DIMENSIONS  
(UNITS OF MEASURE=MILLIMETER)

SYMBOL	MIN	NOM	MAX
A	4.40	4.57	4.70
A1	0	0.10	0.25
A2	2.59	2.69	2.79
b	0.77	-	0.90
b1	0.76	0.81	0.86
b2	1.23	-	1.36
b3	1.22	1.27	1.32
c	0.34	-	0.47
c1	0.33	0.38	0.43
c2	1.22	-	1.32
D	9.05	9.15	9.25
D1	6.60	-	-
E	10.06	10.16	10.26
E1	7.80	-	8.20
e	2.54BSC		
H	14.70	15.10	15.50
L	2.00	2.30	2.60
L1	1.17	1.27	1.40
L2	-	-	1.75
L3	0.25BSC		
L4	2.00REF		
θ	0°	-	8°
θ 1	5°	7°	9°
θ 2	1°	3°	5°

NOTES:  
ALL DIMENSIONS REFER TO JEDEC STANDARD TO-263 AB DO NOT INCLUDE MOLD FLASH OR PROTRUSIONS.

## Ordering Information

Part Number	Package	Packing	Marking	Base Quantity
KN3D10065E	D <sup>2</sup> PAKTO-263-2L	Tape & Reel	KN3D10065E	800