KIA
KMOS Semiconductor

KCP035N10N

Features

- Low RDS(on) SGT technology
- Low thermal impedance
- Fast switching speed

Applications

- DC/DC conversion
- Power switch
- Motor drives

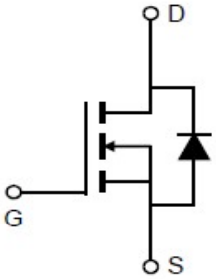
Product Summary

V_{DS}	100V
$R_{DS(on).typ.}$	3.3mΩ
I_D	120A

100% DVDS Tested
100% Avalanche Tested

RoHS H F

TO-220



Package Marking and Ordering Information

Part #	Marking	Package	Packing	Reel Size	Tape Width	Qty
KCP035N10N	KCP035N10N	TO-220	Tape&Reel	N/A	N/A	50pcs

Absolute Maximum Ratings

Parameter	**Symbol**	**Value**	**Unit**
Drain-source voltage	V_{DS}	100	V
Continuous drain current T_C = 25°C (Silicon limit) T_C = 25°C (Package limit) T_C = 100°C (Silicon limit)	I_D	 120 21 113	A
Pulsed drain current (T_C = 25°C, t_p limited by T_{jmax})	$I_{D\ pulse}$	480	A
Avalanche energy, single pulse (I_D = 13.5A, Rg=25Ω)[1]	E_{AS}	800	mJ
Gate-Source voltage	V_{GS}	±20	V
Power dissipation (T_C = 25°C)	P_{tot}	215	W
Operating junction and storage temperature	T_j , T_{stg}	-55...+150	°C

Thermal Resistance

Parameter	Symbol	Max	Unit
Thermal resistance, junction – case.	R_{thJC}	0.58	°C/W
Thermal resistance, junction – ambient(min. footprint)	R_{thJA}	40	

Electrical Characteristic (at Tj = 25 °C, unless otherwise specified)

Parameter	Symbol	Value			Unit	Test Condition
		min.	typ.	max.		
Static Characteristic						
Drain-source breakdown voltage	BV_{DSS}	100	-	-	V	V_{GS}=0V, I_D=250uA
Gate threshold voltage	$V_{GS(th)}$	2.2	3	3.8	V	V_{DS}=V_{GS},I_D=250uA
Zero gate voltage drain current	I_{DSS}	-	-	1	μA	V_{DS}=100V,V_{GS}=0V T_j=25°C T_j=125°C
Gate-source leakage current	I_{GSS}	-	-	±100	nA	V_{GS}=±20V,V_{DS}=0V
Drain-source on-state resistance	$R_{DS(on)}$	- -	3.3	3.9	mΩ	VGS=10V, ID=50A TO-220
Transconductance	g_{fs}	-	113	-	S	V_{DS}=5V, I_D=50A
Dynamic Characteristic						
Input Capacitance	C_{iss}	-	7470	-	pF	V_{GS}=0V, V_{DS}=50V, f=1MHz
Output Capacitance	C_{oss}	-	930	-		
Reverse Transfer Capacitance	C_{rss}	-	50	-		
Gate Total Charge	Q_G	-	130	-	nC	V_{GS}=10V, V_{DS}=50V, I_D=50A
Gate-Source charge	Q_{gs}	-	35	-		
Gate-Drain charge	Q_{gd}	-	40	-		
Turn-on delay time	$t_{d(on)}$	-	50	-	ns	V_{GS}=10V, V_{DS}=50V, R_{GEN}=6Ω , I D = 50 A,
Rise time	t_r	-	74	-		
Turn-off delay time	$t_{d(off)}$	-	97	-		
Fall time	t_f	-	30	-		
Gate resistance	R_G		1.5	Ω		V_{GS}=0V, V_{DS}=0V, f=1MHz

Body Diode Characteristic

Parameter	Symbol	Value			Unit	Test Condition
		min.	typ.	max.		
Body Diode Forward Voltage	V_{SD}	-	0.9	1.2	V	V_{GS}=0V,I_{SD}=50A
Body Diode Reverse Recovery Time	t_{rr}	-	70	-	ns	VDS = 50 V, IF = 50A di/dt = 100 A/μs
Body Diode Reverse Recovery Charge	Q_{rr}	-	147	-	nC	

Electrical characteristicsdiagrams

Fig.1 Typ. transfer characteristics

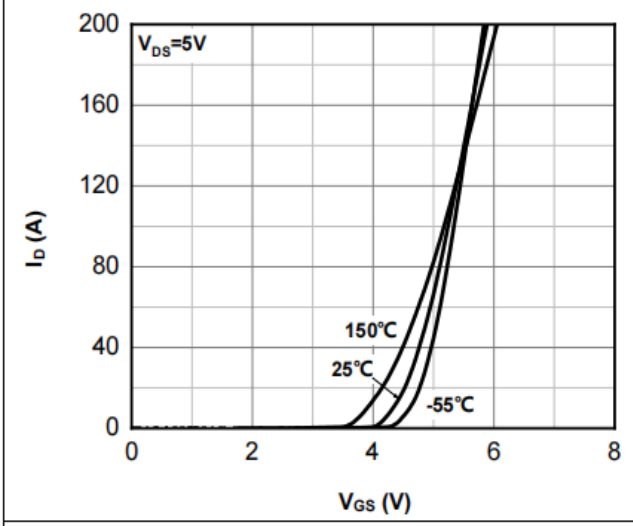


Fig.2 Typ. output characteristics

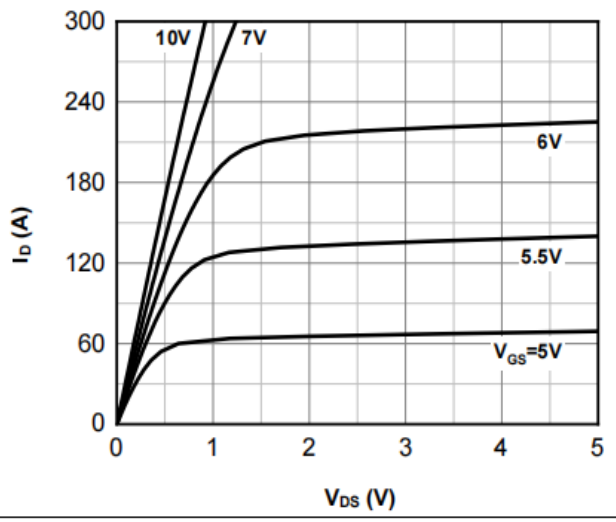


Fig.3 Normalized on-resistance vs drain current

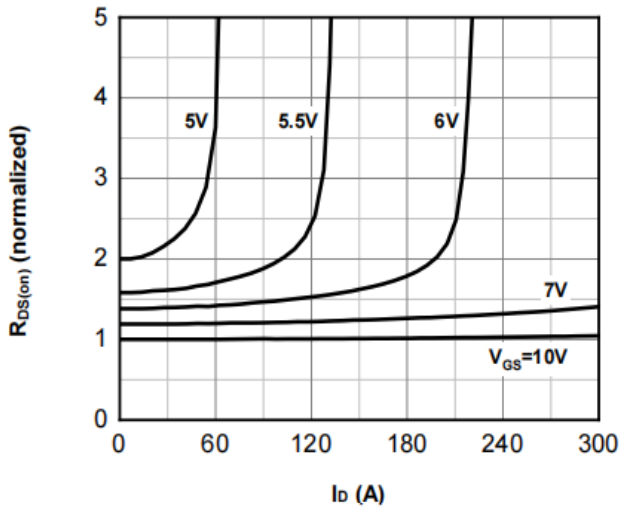


Fig.4 Typ. on-resistance vs gate-source voltage

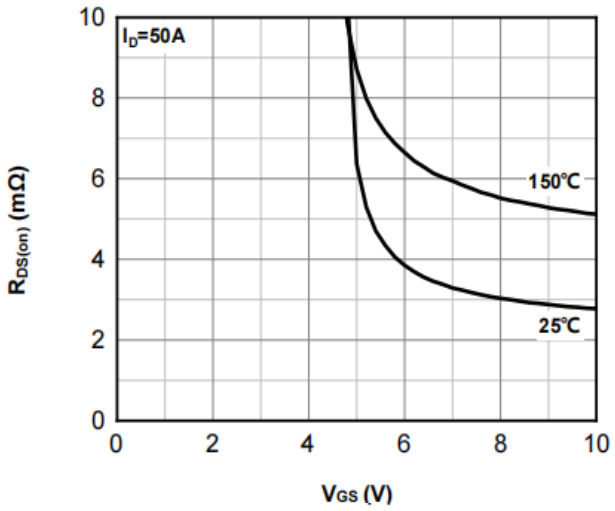


Fig.5 Normalized on-resistance vs junction temperature

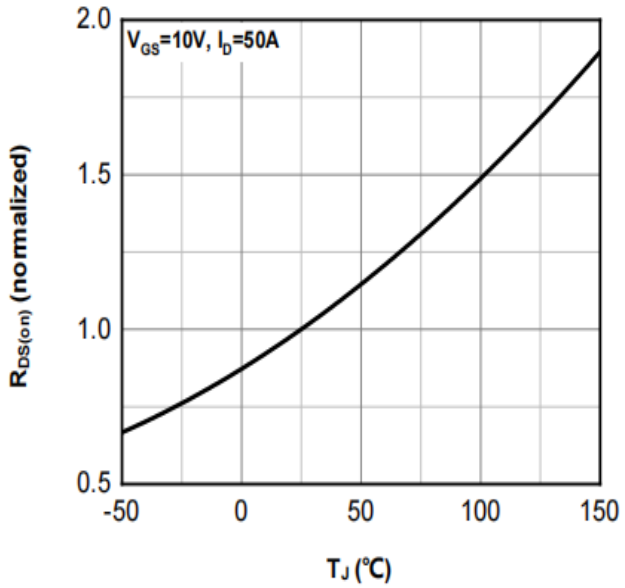


Fig.6 Typ. gate charge

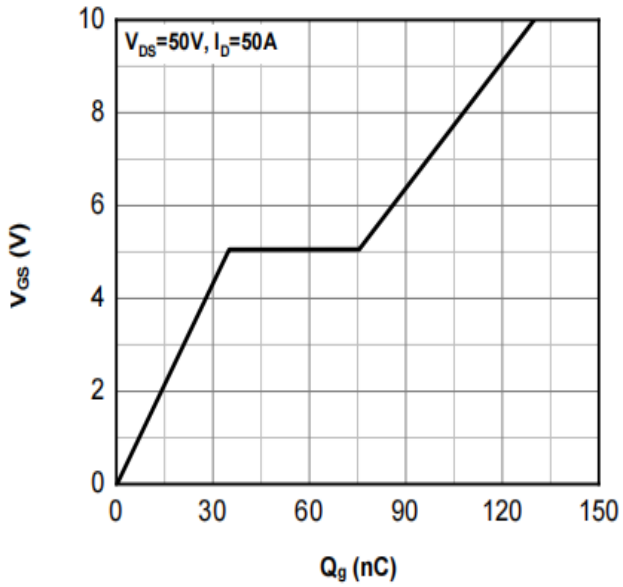


Fig.7 Typ. forward characteristics of body diode

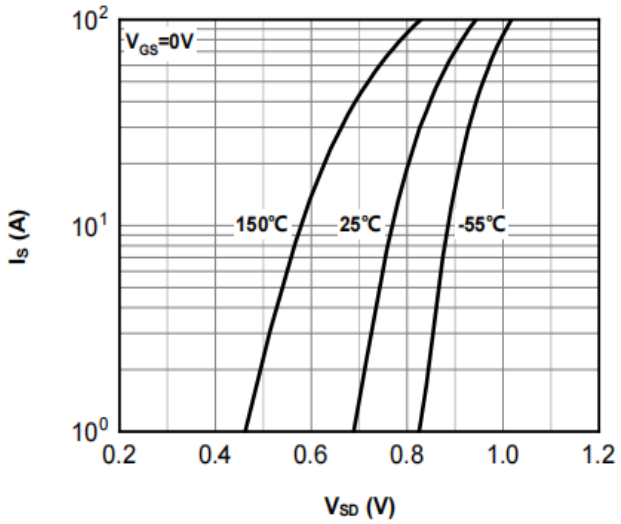


Fig.8 Safe operating area

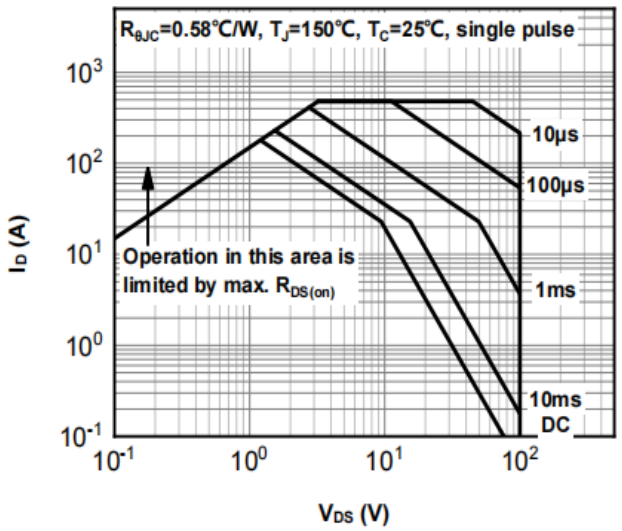


Fig.9 Typ. Capacitance

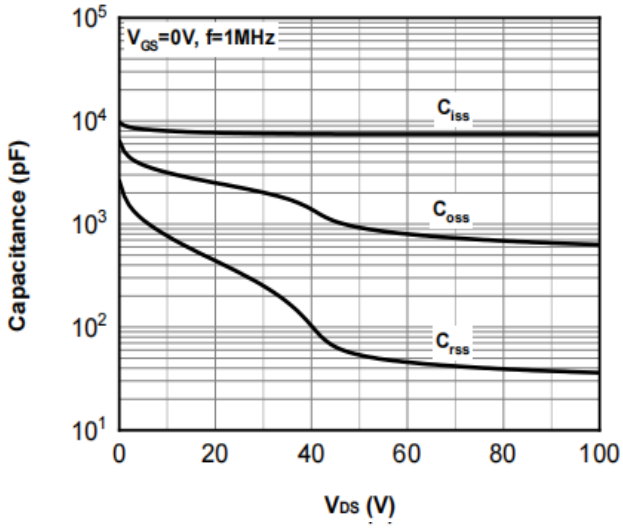


Fig.10 Single pulse maximum power dissipation

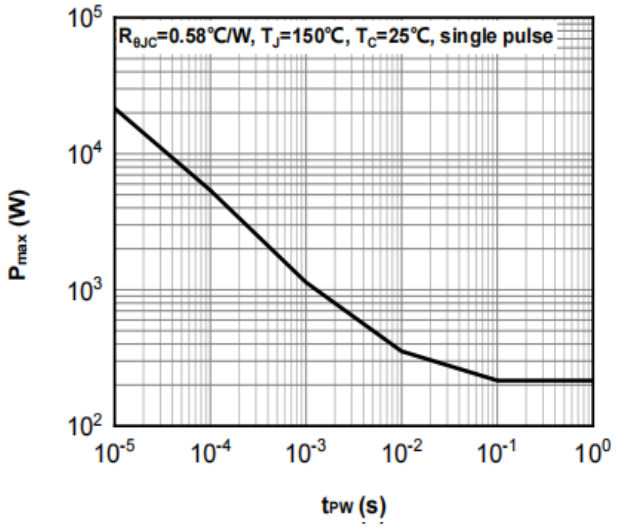


Fig.11 Max. power dissipation vs case temperature

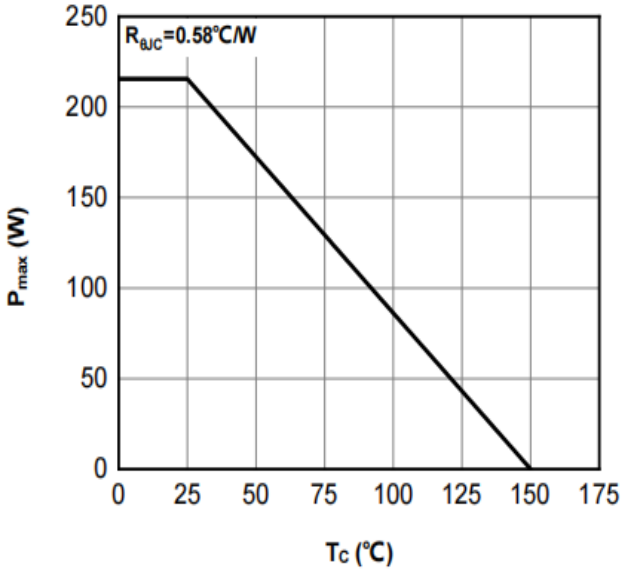


Fig.12 Max. continuous drain current vs case temperature

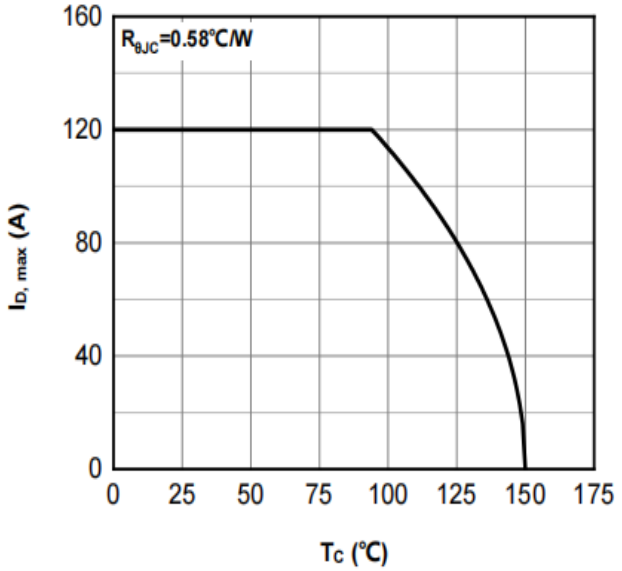


Fig.13 Normalized $V_{(BR)DSS}$ vs junction temperature

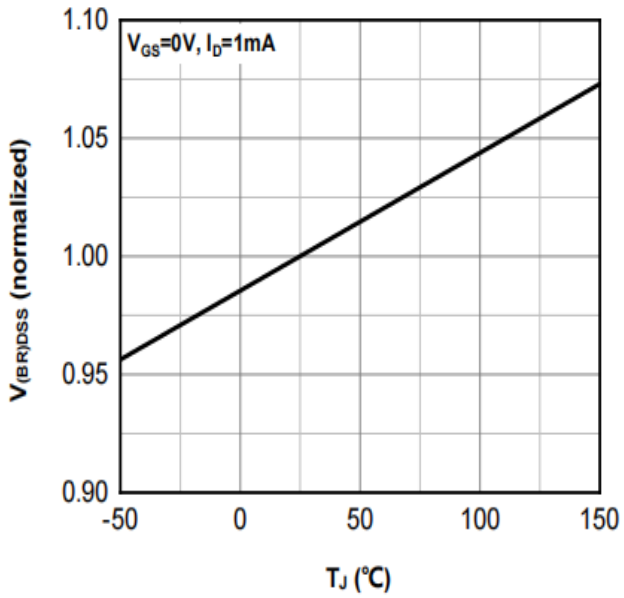


Fig.14 Normalized $V_{GS(th)}$ vs junction temperature

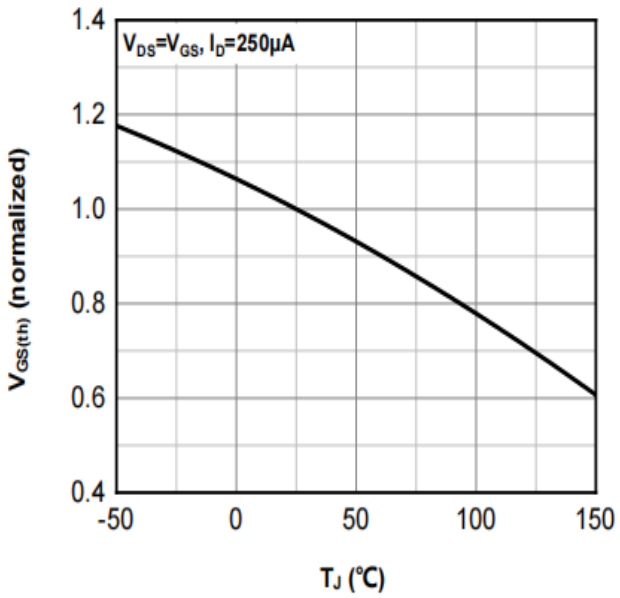
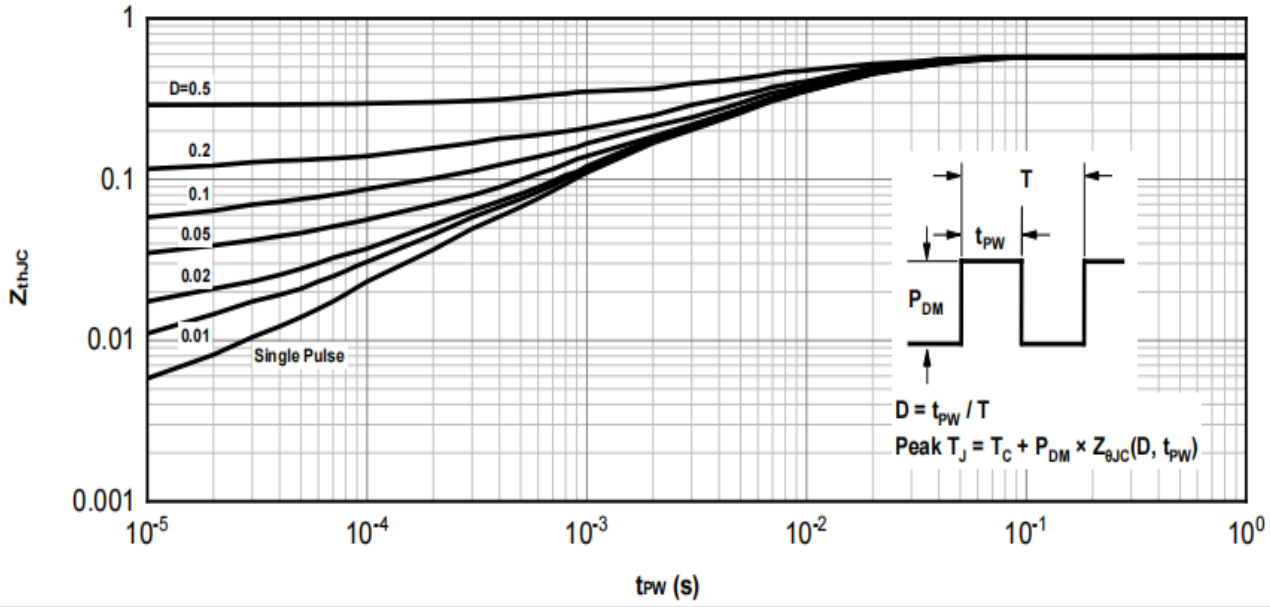
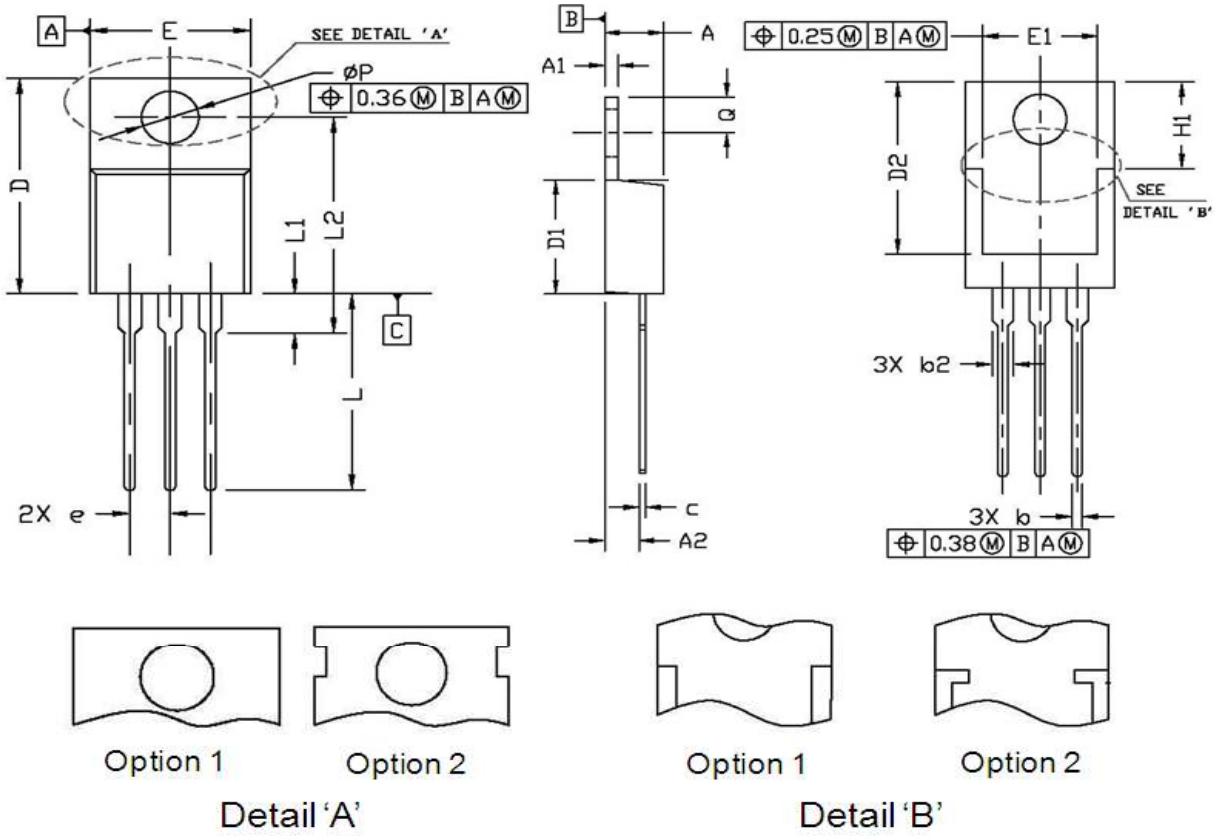


Fig.15 Transient thermal impedance from junction to case



Package Outline: TO-220



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.30	4.80	0.169	0.189
A1	1.20	1.44	0.047	0.057
A2	2.20	2.90	0.087	0.114
b	0.69	0.95	0.027	0.037
b2	1.00	1.60	0.039	0.063
c	0.33	0.65	0.013	0.026
D	14.70	16.20	0.579	0.638
D1	8.59	9.65	0.338	0.380
D2	11.75	13.60	0.463	0.535
e	2.54 BSC.		0.100 BSC.	
E	9.60	10.60	0.378	0.417
E1	7.00	8.90	0.276	0.350
H1	6.00	7.00	0.236	0.276
L	12.60	14.80	0.496	0.583
L1	2.50	3.90	0.098	0.154
L2	12.13	16.50	0.478	0.650
Q	2.40	3.10	0.094	0.122
P	3.50	3.95	0.138	0.156