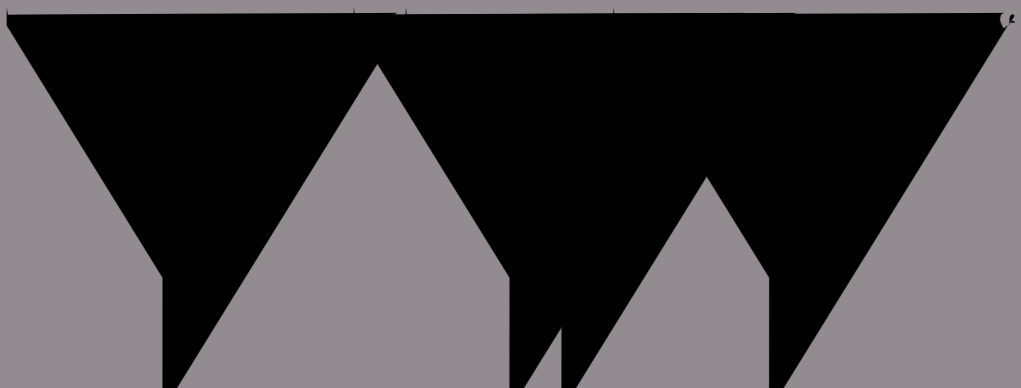
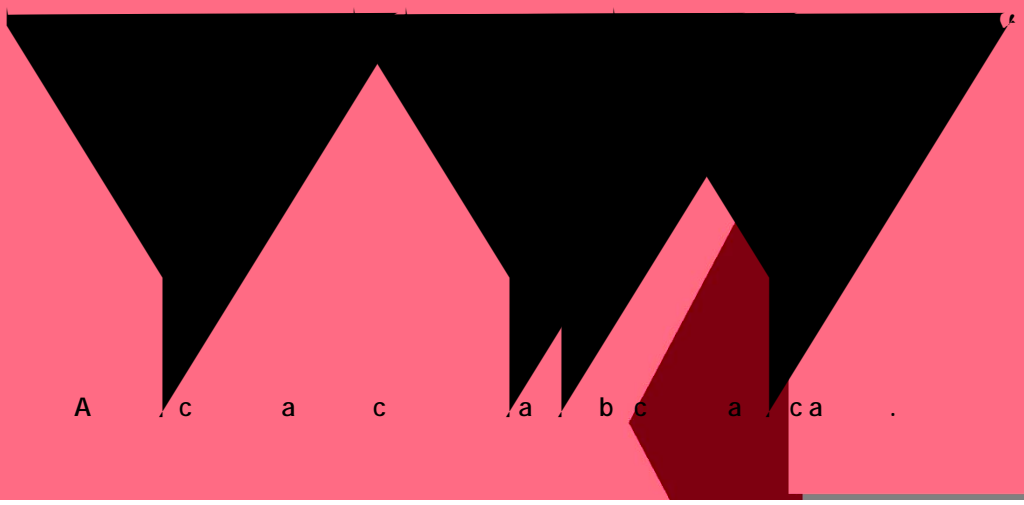
JJMICROELECTRONICS

1350V 25A Trench and [redacted] IGBT [redacted]



V_{CES}	Collector-emitter voltage	1350	V
V_{GES}	Gate-emitter voltage	±20	V
I_C	Continuous collector current (T_C=25)	50	A
	Continuous collector current (T_C=100)	25	A
I_{CM}	Pulsed collector current, t_p limited by T_{vjmax}	100	A
I_F	Diode continuous forward current (T_C=100)	25	A
I_{FM}	Diode maximum current, t_p limited by T_{vjmax}	100	A
P_{tot}	Power dissipation (T_C=25)	283	W
	Power dissipation (T_C=100)	142	W
T_{vj}	Operating junction temperature range	-40 to +175	
T_{stg}	Storage temperature range	-55 to +150	

$R_{th(j-c)}$ Thermal resistance, j



(T_{vj}=25 unless otherwise specified)

Static characteristics

BV_{CES}	Collector-emitter breakdown voltage	V_{GE}=0V, I_C=1mA	1480	-	-	V
I_{CES}	Collector-emitter leakage current	V_{CE}=1350V, V_{GE}=0V	-	-	100	μA
I_{GES}	Gate leakage current, forward	V_{GE}=20V, V_{CE}=0V	-	-	100	nA
	Gate leakage current, reverse	V_{GE}=-20V, V_{CE}=0V	-	-	-100	nA
$V_{GE(th)}$	Gate-emitter threshold voltage	V_{GE}=V_{CE}, I_C=1mA	5.0	5.4	6.0	V
$V_{CE(sat)}$	Collector-emitter saturation voltage	V_{GE}=15 V, I_C=25A	-	1.65	-	V
		V_{GE}=15V, I_C=25A, T_{vj}=175	-	2.05	-	V

Dynamic characteristics

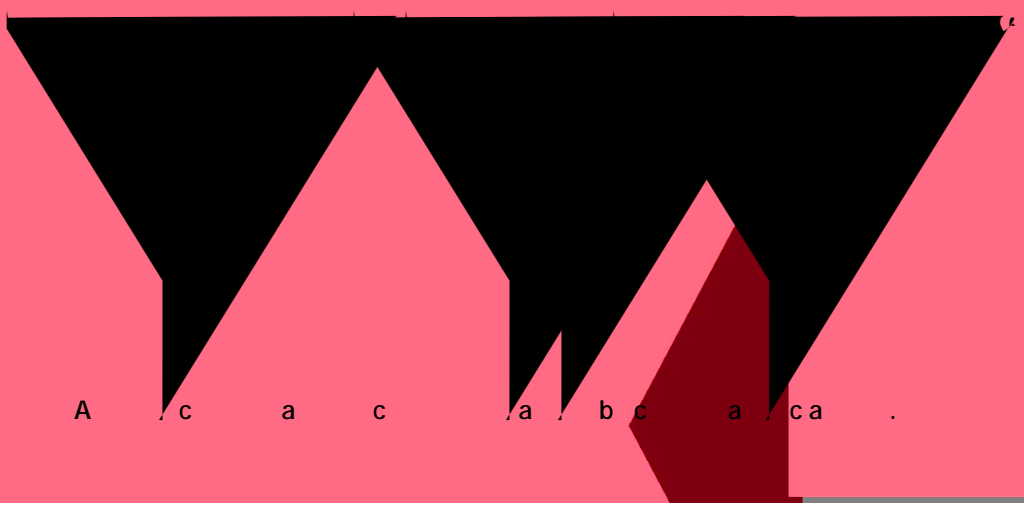
C_{ies}	Input capacitance	V_{CE}=30V V_{GE}=0V f=1MHz	-	4530	-	pF
C_{oes}	Output capacitance		-	47	-	pF
C_{res}	Reverse transfer capacitance		-	20	-	pF
Q_g	Total gate charge	V_{CC}=1080V V_{GE}=15V I_C=25A	-	147	-	nC

Switching characteristics

$t_{d(on)}$	Turn-on delay time	V_{CC}=600V V_{GE}=0/15V I_C=25A R_G=10 Inductive load	-	37	-	ns
t_r	Rise time		-	29	-	ns
$t_{d(off)}$	Turn-off delay time		-	192	-	ns
t_f	Fall time		-	183	-	ns
E_{on}	Turn-on energy		-	1.2	-	mJ
E_{off}	Turn-off energy		-	1.1	-	mJ
E_{ts}	Total switching energy		-	2.3	-	mJ
$t_{d(on)}$	Turn-on delay time	V_{CC}=600V V_{GE}=0/15V I_C=25A R_G=10 , T_{vj}=175 Inductive load	-	34	-	ns
t_r	Rise time		-	28	-	ns
$t_{d(off)}$	Turn-off delay time		-	203	-	ns
t_f	Fall time		-	231	-	ns
E_{on}	Turn-on energy		-	1.3	-	mJ
E_{off}	Turn-off energy		-	1.6	-	mJ
E_{ts}	Total switching energy		-	2.9	-	mJ

(T_{vj}=25 unless otherwise specified)

	tward v		-	1.75	-	V
		5	-	1.70	-	V



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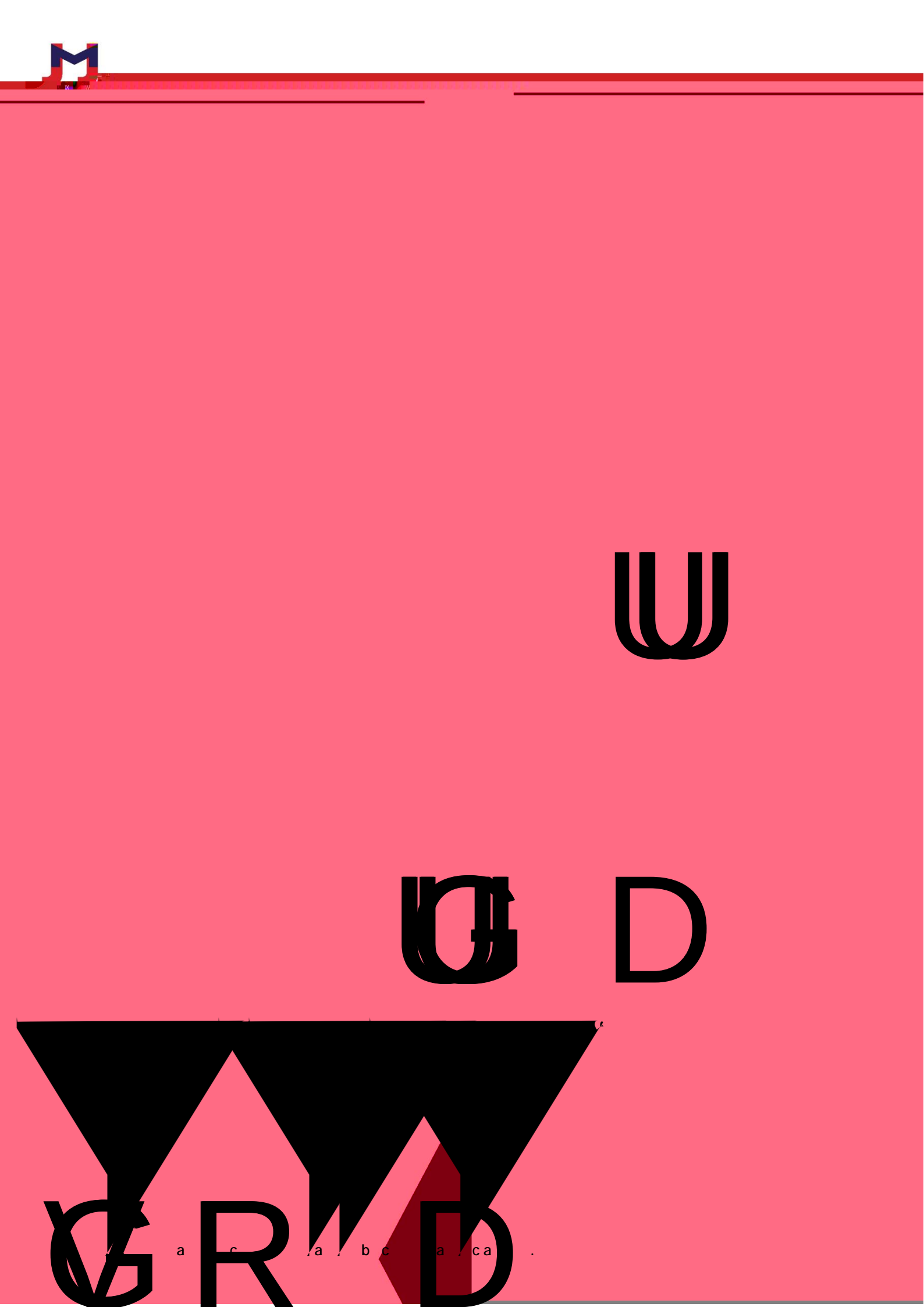


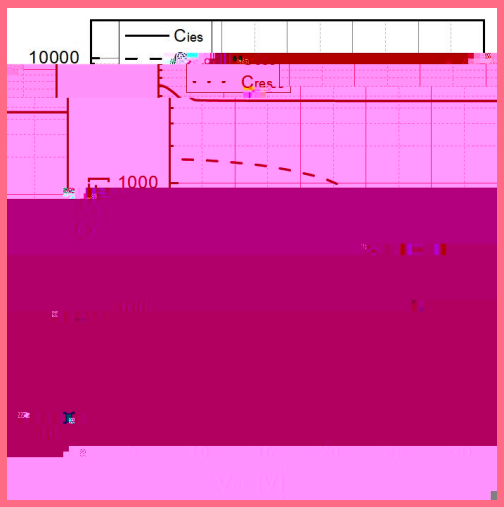


Fig 13. Typical capacitance as a function of V_{CE}
(f=1Mhz, V_{GE}=0V)

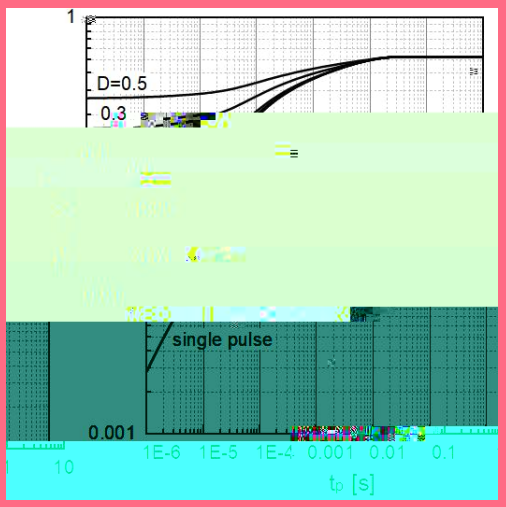


Fig 14. Transient thermal impedance of IGBT

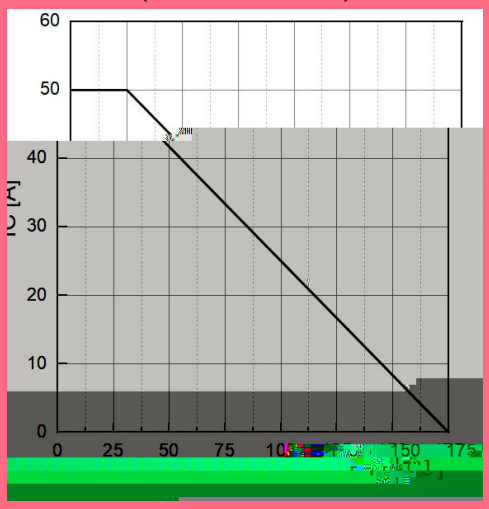


Fig 15. Continuous collector current as a function of Tc
Tvj 175

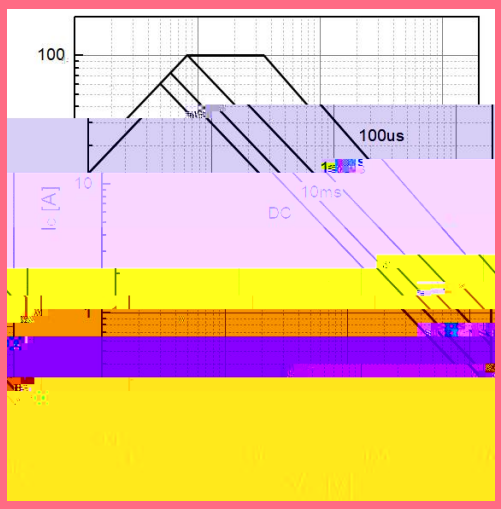
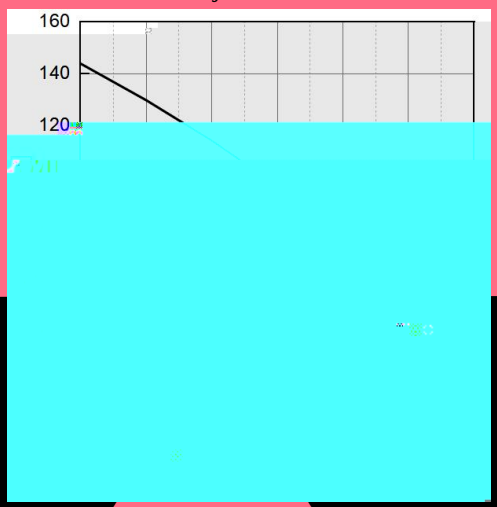


Fig.16 Forward bias safe operating area



F ed collector current Tc
(Tvj 175 D=1 t

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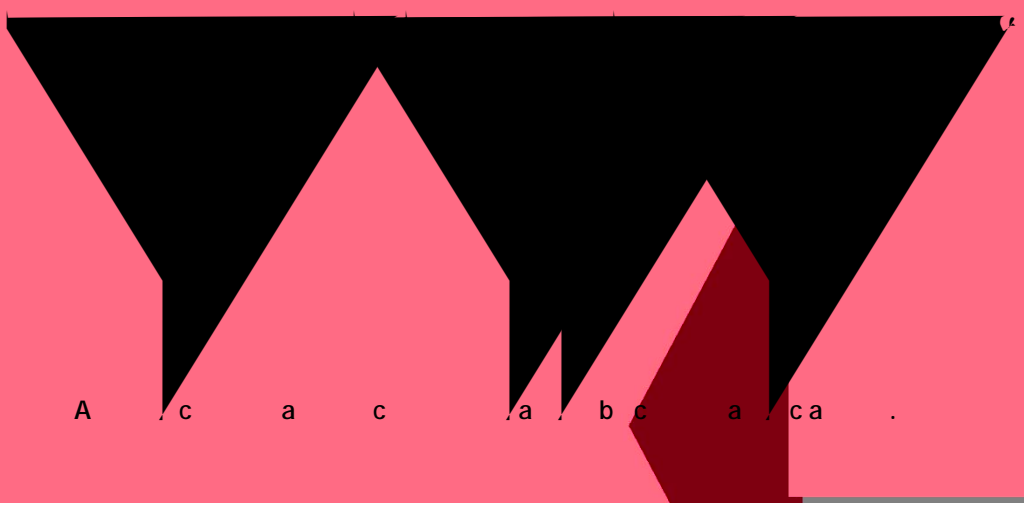

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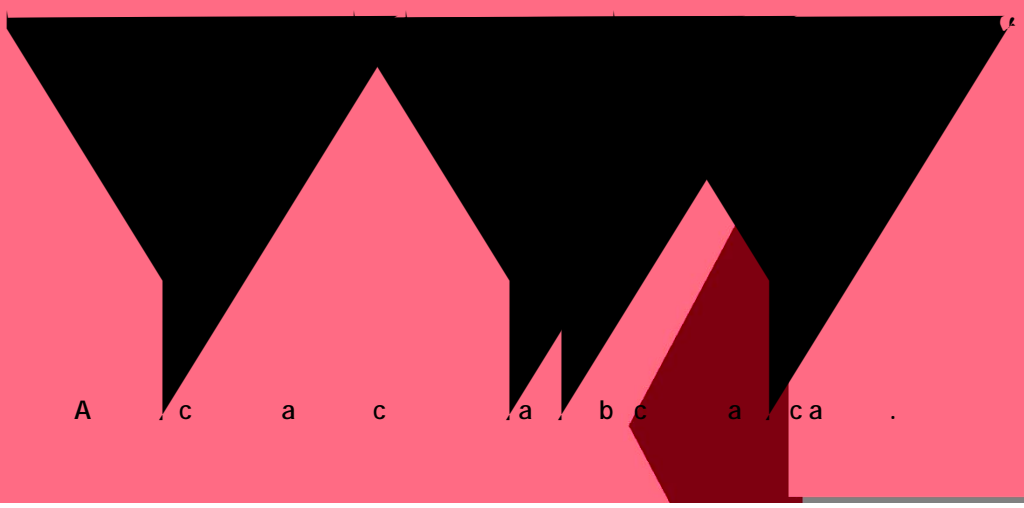

A c a c a / b c a / c a .