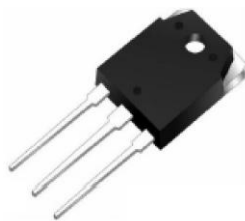
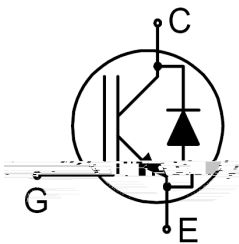


Rev.D Oct.-2015

Insulated-Gate Bipolar Transistor in a TO-3P Plastic Package.

Built in fast recovery diode, Saturation voltage positive temperature coefficient, High reliability and thermal stability parameters, good agreement, RoHS product.

General purpose inverter, Frequency converters, Uninterrupted Power Supply(UPS).



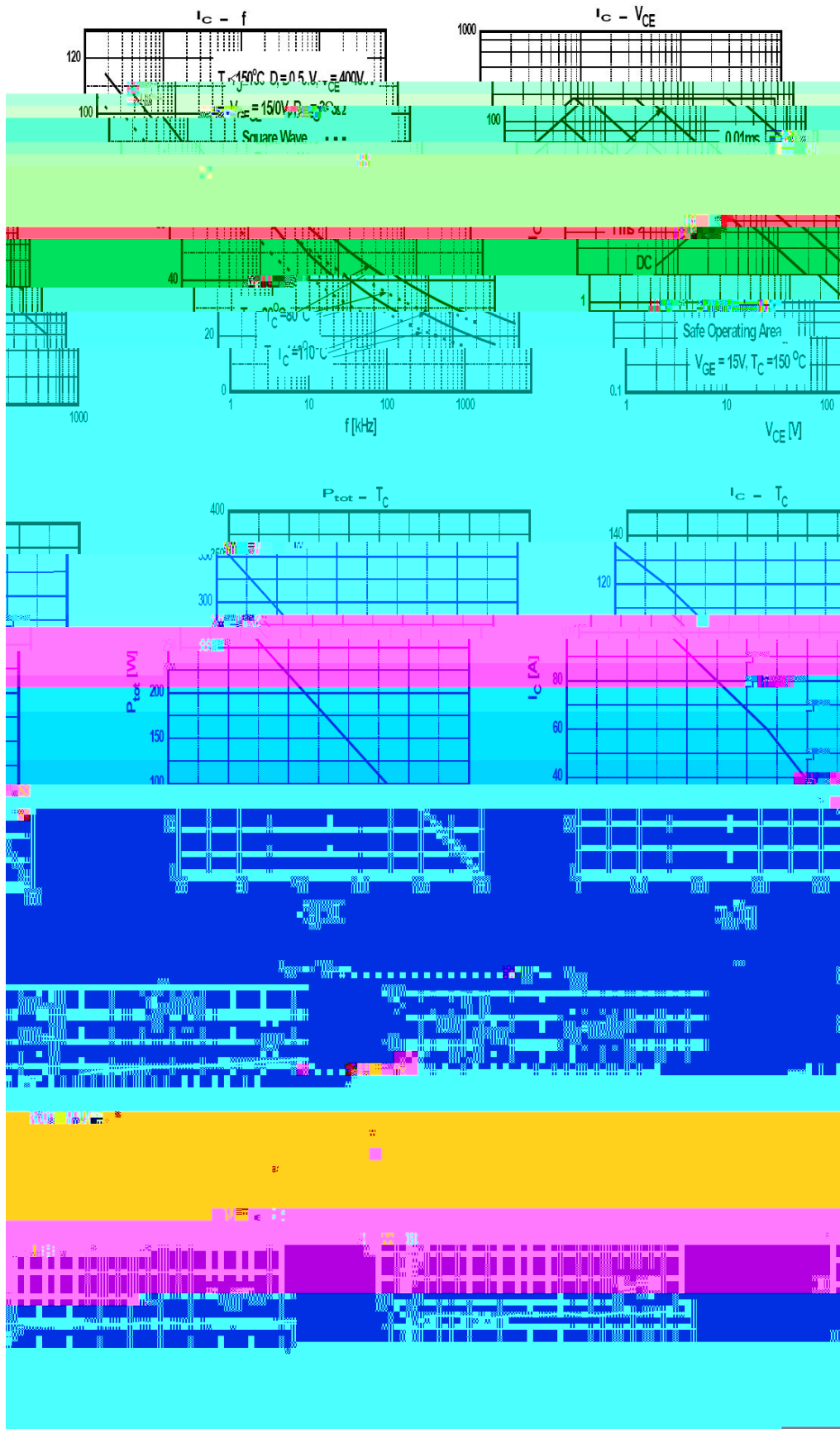
PIN1 Gate PIN 2 Collector PIN 3 Emitter

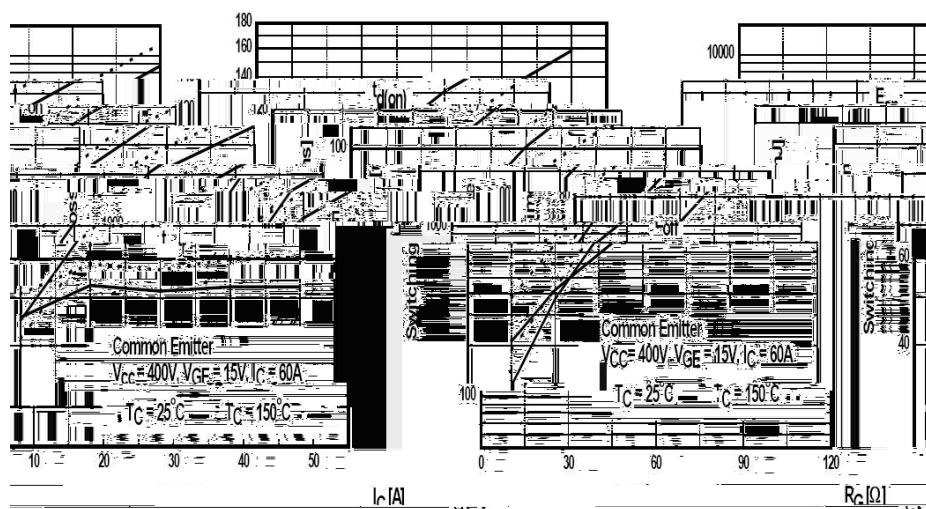
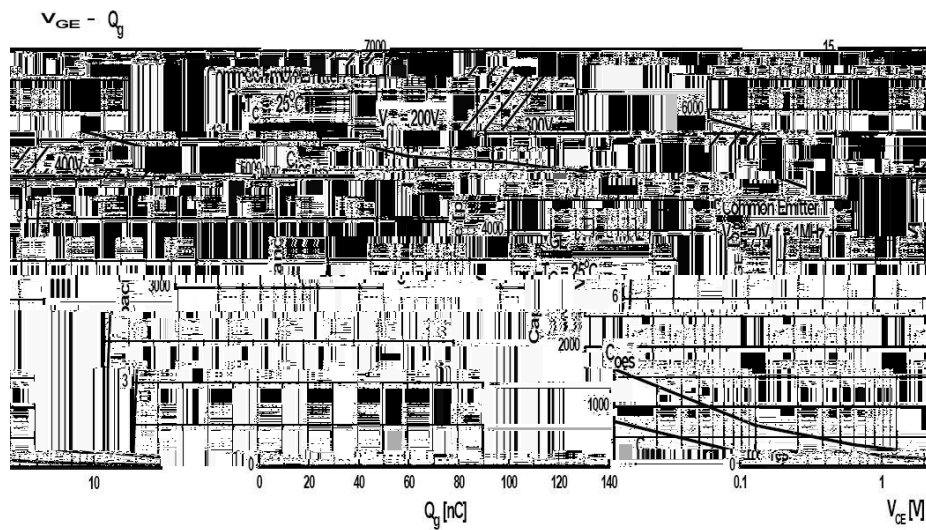
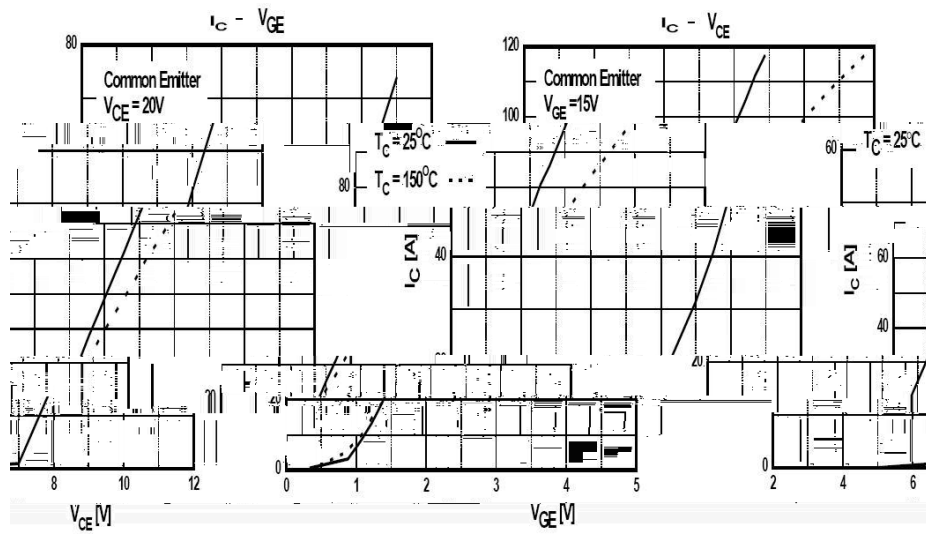
See Marking Instructions.

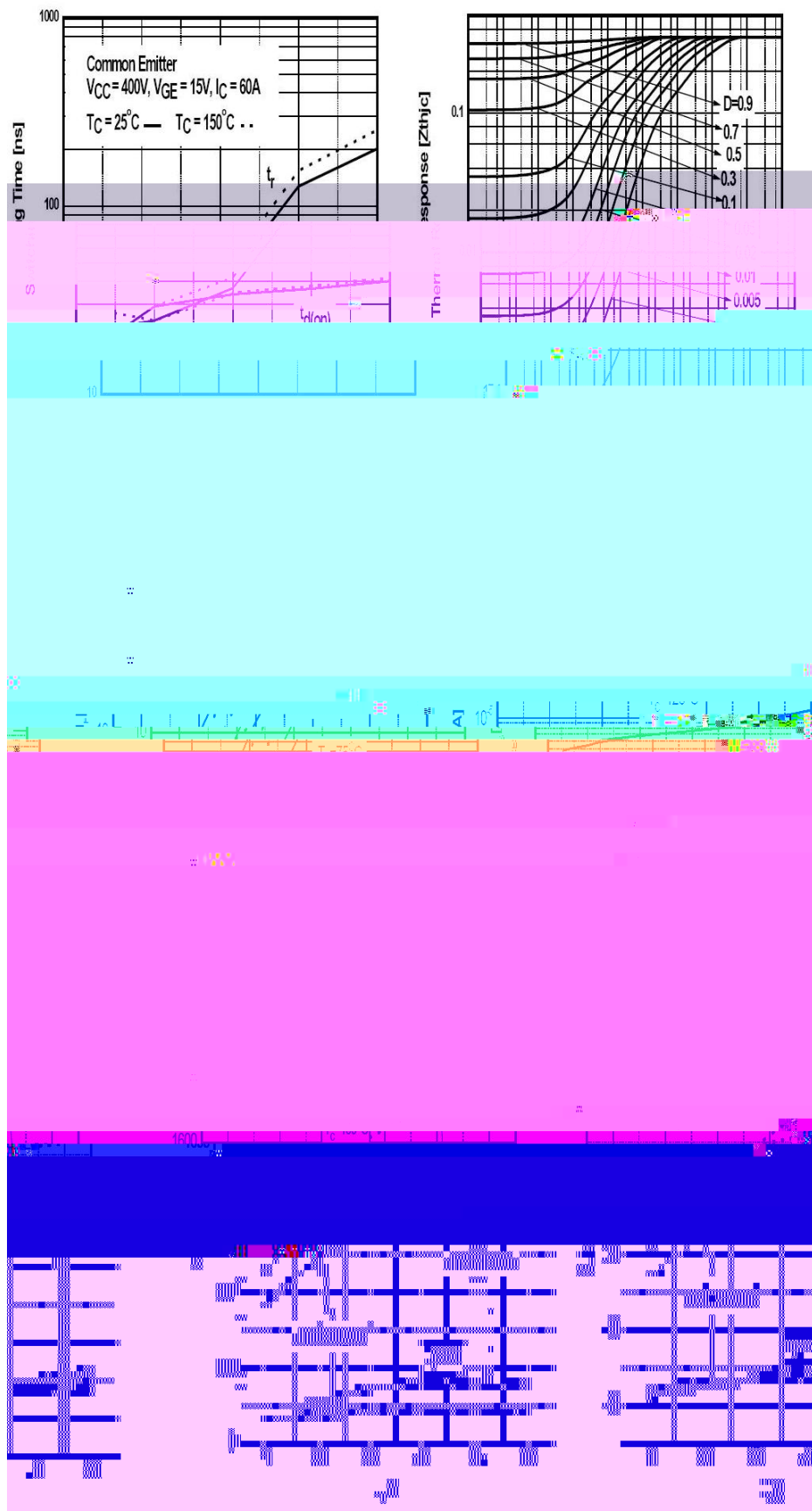
Parameter	Symbol	Rating	Unit
Collector-emitter voltage	V_{CES}	650	V
Gate-emitter voltage	V_{GES}	± 20	V
Collector current@ $T_C=25^\circ\text{C}$	I_C	120	A
Collector current@ $T_C=100^\circ\text{C}$		60	A
Collector peak current, T_P limited by T_{JMAX}	I_{CM}	180	A
Diode forward current@ $T_C=100^\circ\text{C}$	I_F	30	A
Diode maximum forward current	I_{FM}	60	A
Power dissipation($T_C=25^\circ\text{C}$)	P_D	310	W
Power dissipation($T_C=100^\circ\text{C}$)		125	W
Operating junction and storage temperature range	T_J, T_{stg}	-55 155	$^\circ\text{C}$
Maximum temperature for soldering	T_L	260	$^\circ\text{C}$
IGBT thermal resistance,junction-case	$R_{th(j-c)}$	0.4	$^\circ\text{C/W}$
Diode thermal resistance,junction-case	$R_{th(j-c)}$	1.2	$^\circ\text{C/W}$
Thermal resistance,junction-ambient	$R_{th(j-a)}$	40	$^\circ\text{C/W}$

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector-emitter breakdown voltage	V_{CES}	$V_{GE}=0V$ $I_{CE}=1.0mA$	650	-	-	V
Zero gate voltage Collector current	I_{CES}	$V_{GE}=0V$ $V_{CE}=650V$	-	-	4	μA
Gate-body leakage current	I_{GES}	$V_{GE}=\pm 20V$ $V_{CE}=0V$	-	-	± 100	nA
Gate threshold voltage	$V_{GE(th)}$	$I_C=0.8mA$ $V_{CE}=V_{GE}$	5.3	5.7	6.3	V
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C=60A$ $V_{GE}=15V$	-	2.2	-	V
Input capacitance	C_{ies}	$V_{CE}=25V$ $f=1MHz$ $V_{GE}=0V$	-	5150	-	pF
Output capacitance	C_{oes}		-	300	-	
Reverse transfer capacitance	C_{res}		-	65	-	

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Input capacitance	C_{ies}	$V_{CE}=25V$ $V_{GE}=0V$ $f=1MHz$	-	5150	-	pF
Output capacitance	C_{oes}		-	300	-	
Reverse transfer capacitance	C_{res}		-	65	-	
Turn-on delay time	$t_{d(ON)}$	$V_{CE}=400V$ $I_C=60A$, $R_G=3\Omega$ $V_{GE}=0/15V$ Inductive Load	-	35	-	ns
Rise time	t_r		-	35	-	
Turn-off delay time	$t_{d(OFF)}$		-	107	-	
Fall time	t_f		-	36	-	
Turn-On Switching Loss	E_{on}		-	2.05		mJ
Turn-Off Switching Loss	E_{off}		-	1.11		
Total Switching Loss	E_{ts}		-	3.16		
Total gate charge	Q_G	$V_{CE}=480V$ $I_C=60A$ $V_{GE}=15V$	-	135	-	nC
Diode forward voltage	V_F	$I_F=60A$	-	2.54		V
Reverse recovery time	T_{rr}	$V_R=400V$ $I_F=30A$ $di/dt=500A/\mu S$	-	60		ns
Diode Peak Reverse Recovery Current	I_{rr}		-	12		A
Reverse recovery charge	Q_{rr}		-	0.4		μC







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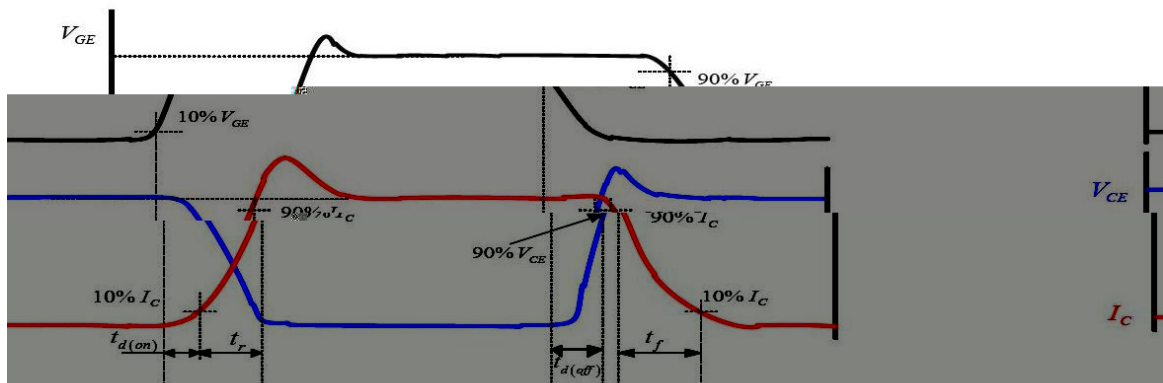


Figure A. Definition of switching times

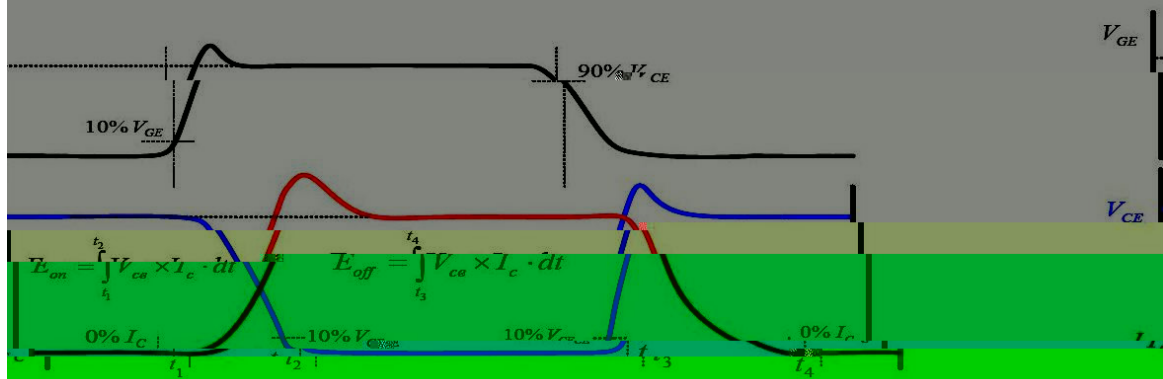


Figure B. Definition of switching losses

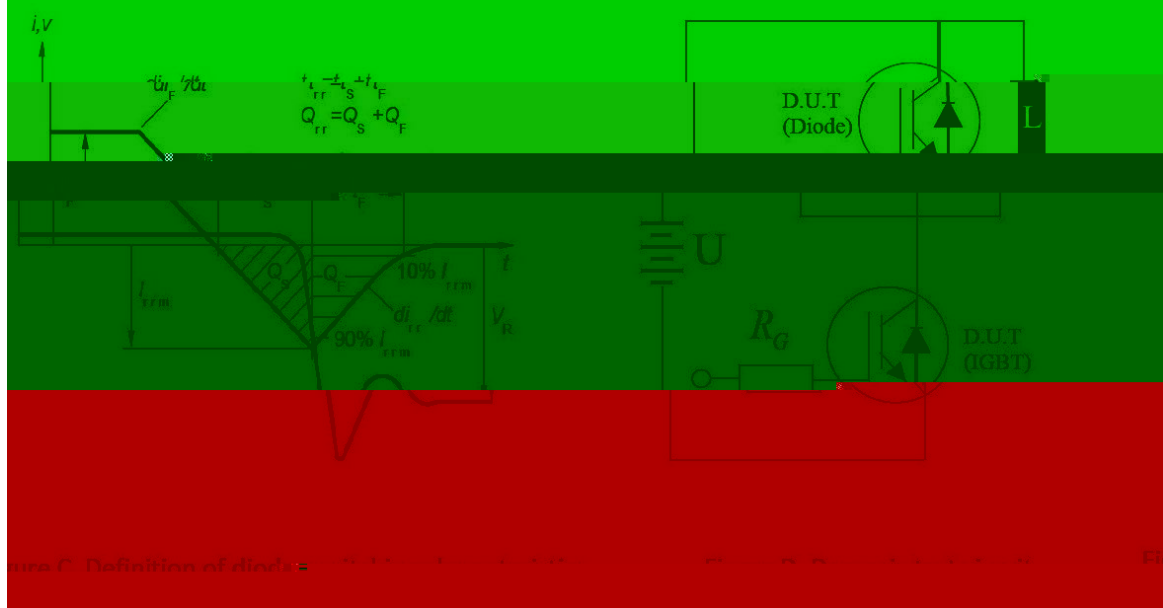
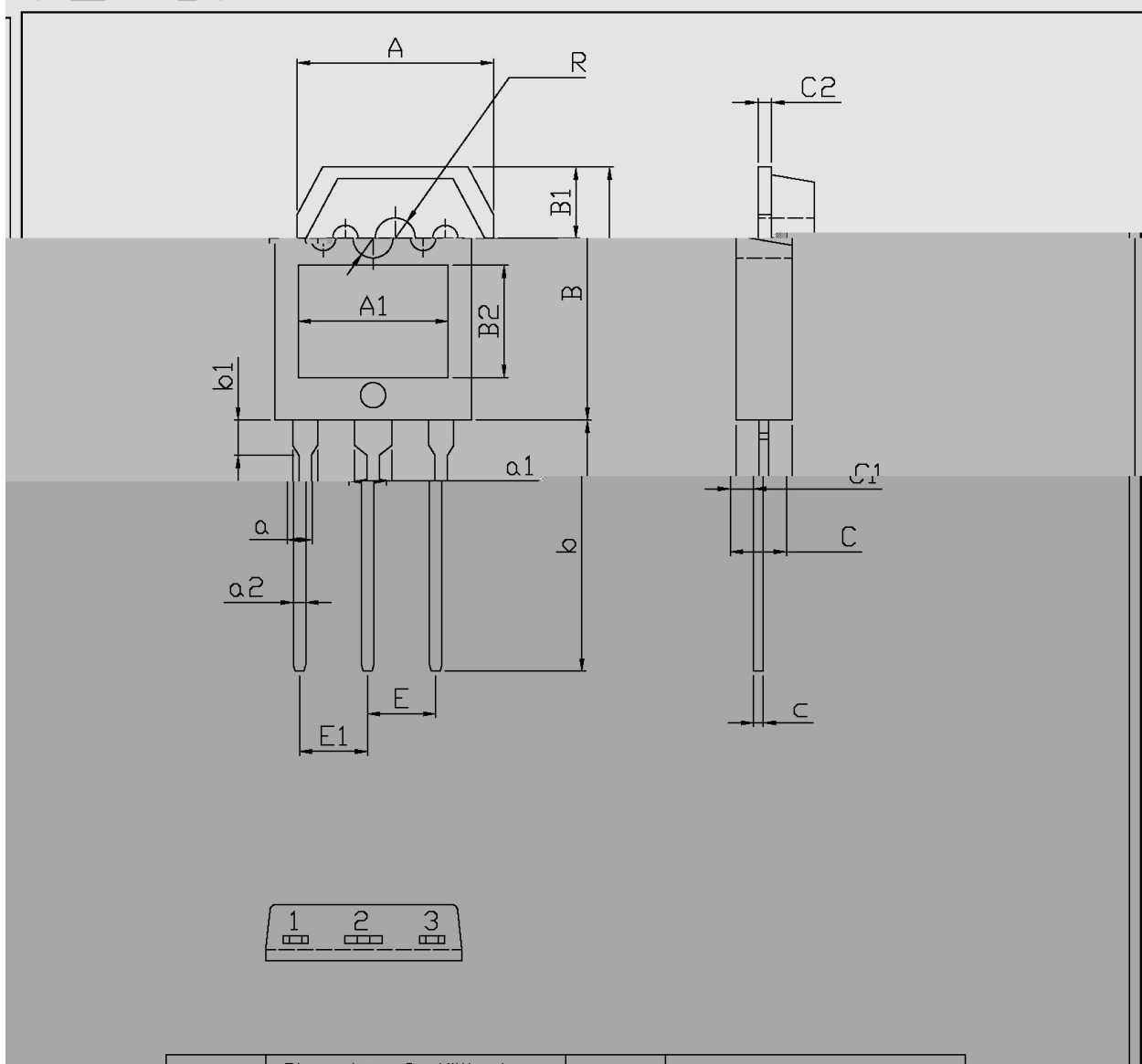


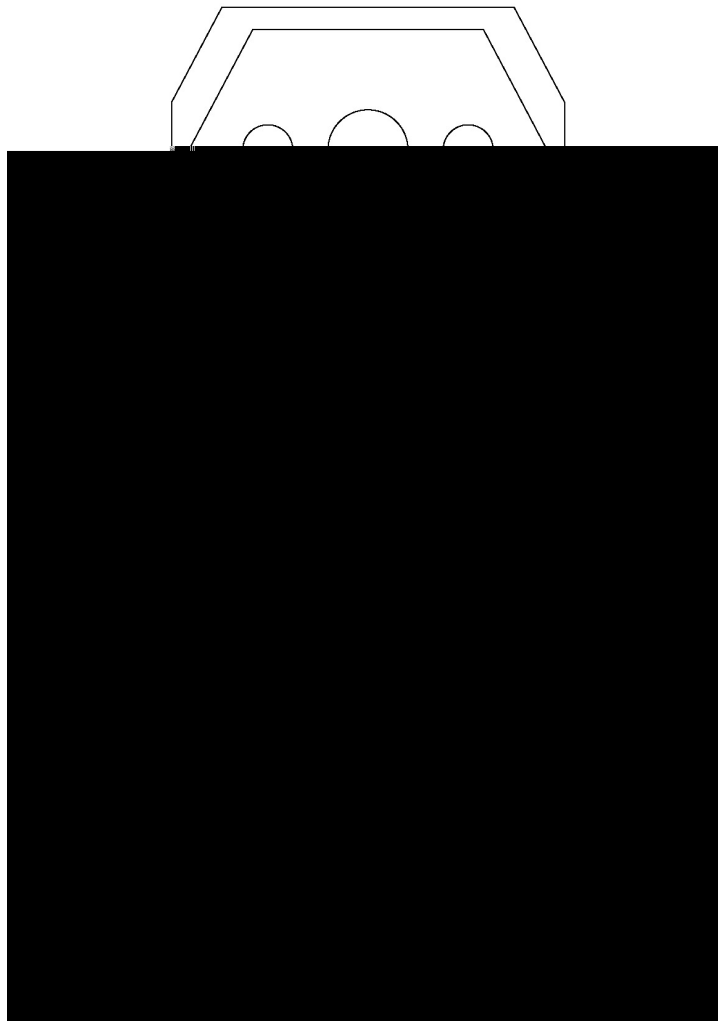
Figure C. Definition of di/dt

TT-3P

单位: mm



Dimensions in Millimeters			Dimensions in Millimeters		
Symbol	Min	Max	Symbol	Min	Max
A	15.4	16.0	a2	0.8	1.2
R	3.1	3.5	E	5.45	
B	19.8	20.8	E1	5.45	
B1	5.5	5.9	C	4.3	4.7
B2	9.0		C1	1.2	1.6



Note:

BR: Company Code.

G60N65D: Product Type.

****: Lot No. Code, code change with Lot No.

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Note:

- | | | | |
|---|--------|-----------|---|
| 1 | 25 150 | 60 90sec; | 1.Preheating:25~150 , Time:60~90sec. |
| 2 | 255 5 | 5 0.5sec; | 2.Peak Temp.:255 5 , Duration:5 0.5sec. |