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

, , , RoHS

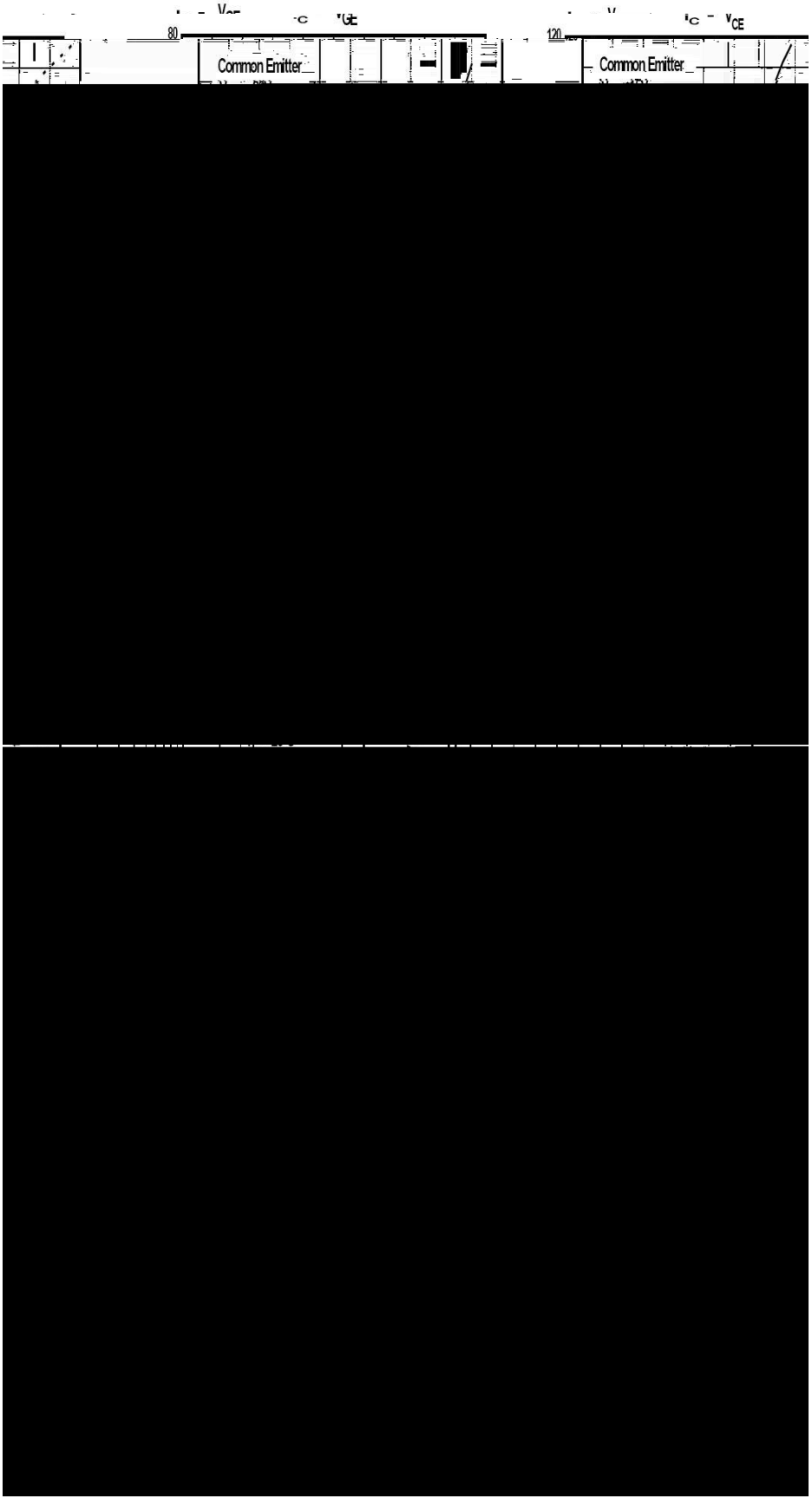
Parameter	Symbol	Rating	Unit
Collector-emitter voltage	V_{CES}	650	V
Gate-emitter voltage	V_{GES}	±20	V
Collector current@T_C=25	I_C	120	A
Collector current@T_C=100		60	A
Collector peak current, T_P limited by T_{JMAX}	I_{CM}	180	A
Diode forward current@T_C=100	I_F	30	A
Diode maximum forward current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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector-emitter breakdown voltage	V_{CES}	V_{GE}=0V I_{CE}				

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 VGE=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	Trr	VR=400V I_F=30A di/dt=500A/ S	-	60		ns
Diode Peak Reverse Recovery Current	Irr		-	12		A
Reverse recovery charge	Qrr		-	0.4		uC

/ Electrical Characteristic Curve

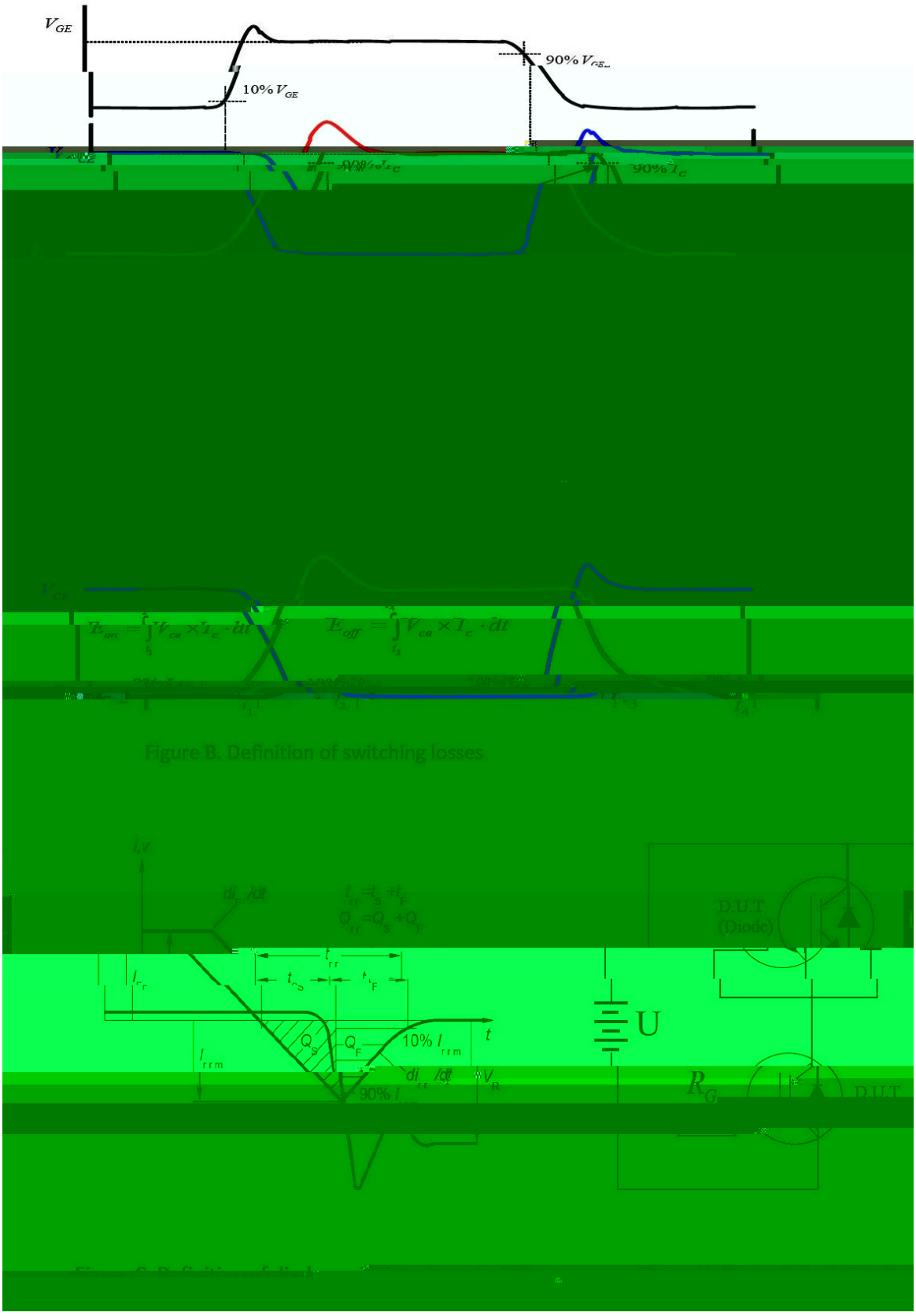
/ Electrical Characteristic Curve



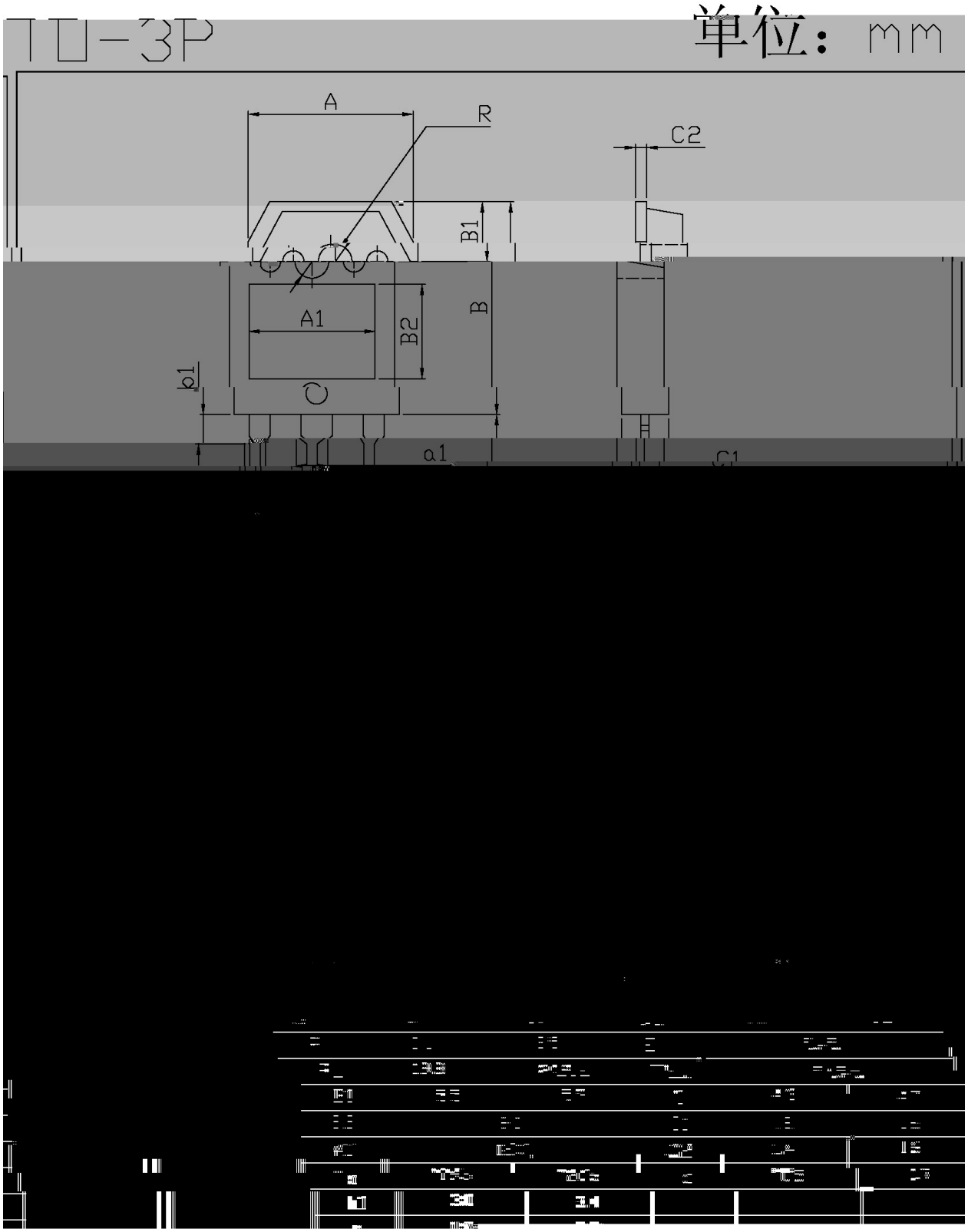
/ Electrical Characteristic Curve



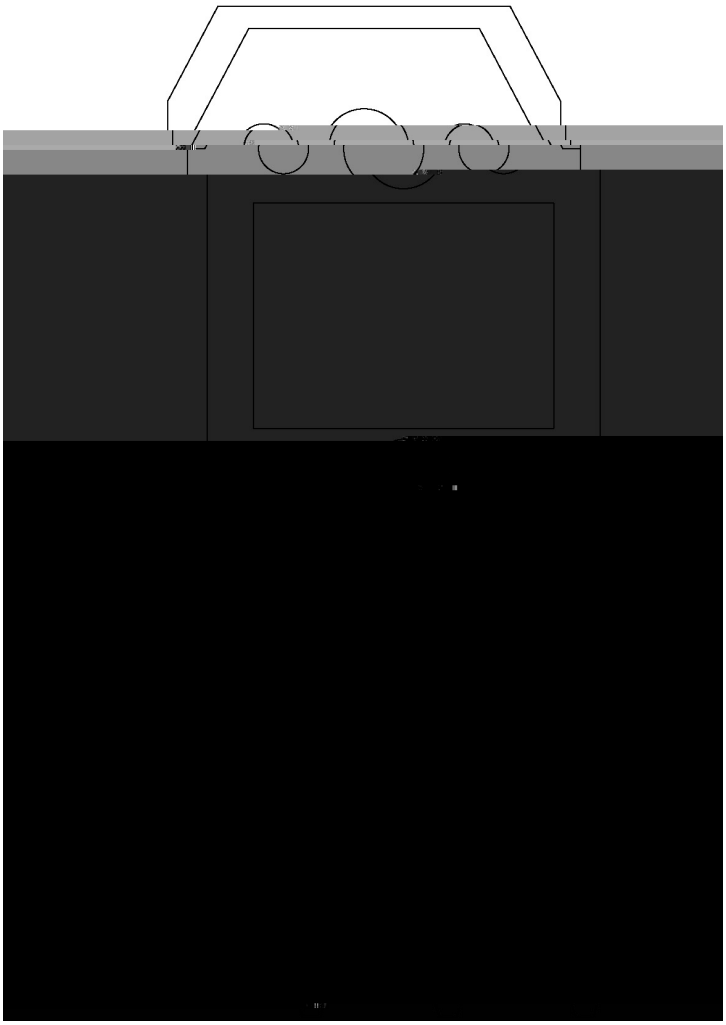
/ Wave curve


V_{GE}
$10\%\ V_{GE}$
$90\%\ V_{GE}$
$90\%\ I_C$
$E_{on} = \int_{t_1}^{t_2} V_{ce} \times I_c \cdot dt$
$E_{off} = \int_{t_3}^{t_4} V_{ce} \times I_c \cdot dt$
Figure B. Definition of switching losses
$t_{rr} = t_a + t_b$
$Q_{rr} = Q_a + Q_b$
t_{rr}
t_a
t_b
I_{rr}
I_{rrm}
Q_a
Q_b
$10\%\ I_{rrm}$
$90\%\ I_{rrm}$
V_R
t
D.U.T
(Diode)
U
R_G
D.U.T

/ Package Dimensions



/ Marking Instructions



BR:

G60N65D

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Note:

BR:	Company Code.
G60N65D:	Product Type.
****:	Lot No. Code, code change with Lot No.

BRG60N65D
Rev.D Oct.-2015