General Description

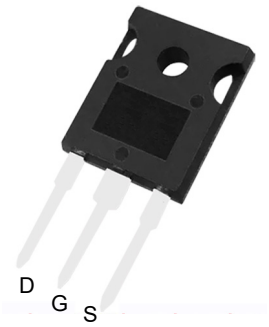
The MY25T120GBT uses Trench Field Stop technology, have Low gate charge ,Low Switching losses and Low VCEsat, With anti-parallel fast recove diode , Positive temperature coefficient .

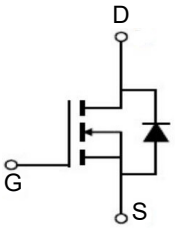
Features

V_{DSS}	1200	V
I_D	25	A
P_D(T_C=25℃)	375	W
PV Inverter	1.78	V

Application

- UPS
- Welding Machines
- PV Inverter





Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
MY25T120GBT	TO-247	MY25T120GBT	600

Absolute Maximum Ratings (T_C=25℃unless otherwise noted)

项目 parameter	符 号 Symbol		数 值 Value	单 位 Unit
最高集电极－发射极直流电压 Collector-Emmiter Voltage	V_{CE}		1200	V
连续集电极极电流 Collector Current-continuous	I_C	（T_C=25℃）	50	A
		（T_C=100℃）	25	
最大脉冲集电极极电流（注1） Collector Current – pulse （note 1）	I_{CM}		75	A
二极管连续正向电流 Diode Continuous Forward Current	I_F	（T_C=25℃）	30	A
		（T_C=100℃）	15	
二极管最大正向电流 Diode Maximum Forward Current	I_{FM}		45	A
最高栅极发射极电压 Gate-Emmiter Voltage	V_{GE}		±30	V
耗散功率 Power Dissipation (T_C=25℃)	P_D		375	W
最高结温及存储温度 Operating and Storage Temperature Range	TJ，TSTG		-50～+150	℃
引线最高焊接温度 Maximum Lead Temperature for Soldering Purposes	TL		260	℃

注1：集极电流由最高结温限制
Note1:Collector current limited by maximum junction temperature

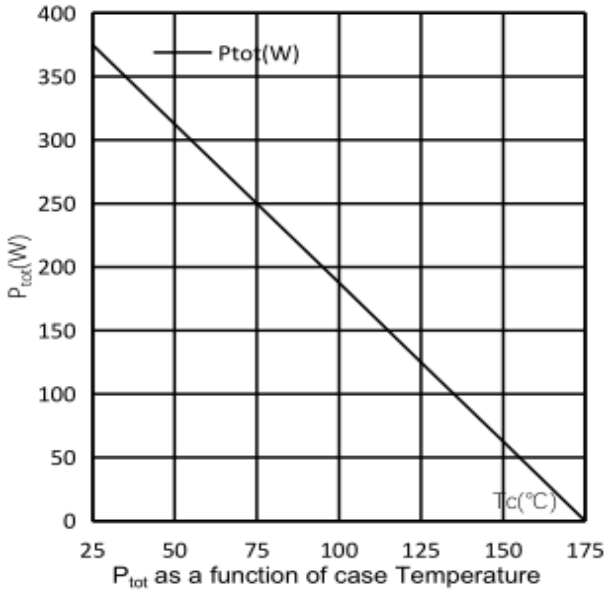
Electrical Characteristics (T_C=25 ℃, unless otherwise noted)

项目 Parameter	符号 Symbol	测试条件 Tests conditions	最小 Min	典型 Typ	最大 Max	单位 Units
关态特性 **Off –Characteristics**						
集电极－发射极击穿电压 Collector-Emmiter Voltage	BV_{CES}	V_{GE}=0V,I_C=250uA	1200	-	-	V
击穿电压温度特性 Breakdown Voltage Temperature	$\Delta BV_{CES}/\Delta T_J$	I_C=1mA,referenced to=25 ℃	-	1.2	-	V/ ℃
零栅压下集电极漏电流 Zero Gate Voltage Collector	I_{CES}	V_{CE} =1200V,V_{GE} =0V	-	-	5	uA
栅极体漏电流	$I_{GES(F/R)}$	V_{CE}=0V, V_{GE} =±30V	-	-	±200	nA
通态特性**On-Characteristics**						
阈值电压 Gate-Emmiter Threshold Voltage	$V_{GE(th)}$	V_{CE} = V_{GE}, I_C=1mA	4.8	5.4	5.9	V
饱和压降 Collector-Emmiter saturation	V_{CESAT}	V_{GE}=15V,I_C=25A,T_J =25°C , T_J =150°C	- -	1.78 3.3	2.2 -	V
动态特性 Dynamic Characteristics						
开启延迟时间 Turn-On delay time	td(on)	V_{GE}=15V, VCC=600V, IC=25A, RG=10Ω, T_J =25°C, Inductive Load L=200uH	-	85.2	-	ns
上升时间 Turn-On rise time	tr		-	53.3	-	ns
关断延迟时间 Turn-Off delay time	td(off)		-	289	-	ns
下降时间 Turn-Off Fall time	tf		-	66.9	-	ns
开启损耗 Turn-on energy	Eon		-	1.73	-	mJ
关断损耗 Turn-off energy	Eoff		-	0.93	-	
总的开关损耗 Total switching energy	Etotal		-	2.66	-	
开启延迟时间 Turn-On delay time	td(on)	V_{GE}=15V, VCC=600V, IC=25A, RG=10Ω, T_J =150°C, Inductive Load L=200uH	-	76.4	-	ns
上升时间 Turn-On rise time	tr		-	50.8	-	ns
关断延迟时间 Turn-Off delay time	td(off)		-	319	-	ns
下降时间 Turn-Off Fall time	tf		-	60.0	-	ns
开启损耗 Turn-on energy	Eon		-	2.56	-	mJ
关断损耗 Turn-off energy	Eoff		-	1.06	-	
总的开关损耗 Total switching energy	Etotal		-	3.62	-	
栅极电荷总量 Total Gate Charge	Qg	V_{CE}=960V, I_C=40A, V_{GE}=15V	-	226	-	nC
栅极-发射极电荷 Gate-emitter charge	Qge		-	45.1	-	
栅极-集电极电荷 Gate-collector charge	Qgc		-	95.1	-	
栅极电阻 Gate Resistance	Rg	f=1.0MHz,V_{CE} OPEN	-	0.95	-	Ω
输入电容 Input capacitance	Cies	V_{CE}=30V, V_{GE} =0V, f=1.0MHz	-	5990	-	pF
输出电容 Output capacitance	Coes		-	92.7	-	
反向传输电容 Reverse transfer capacitance	Cres		-	67.3	-	

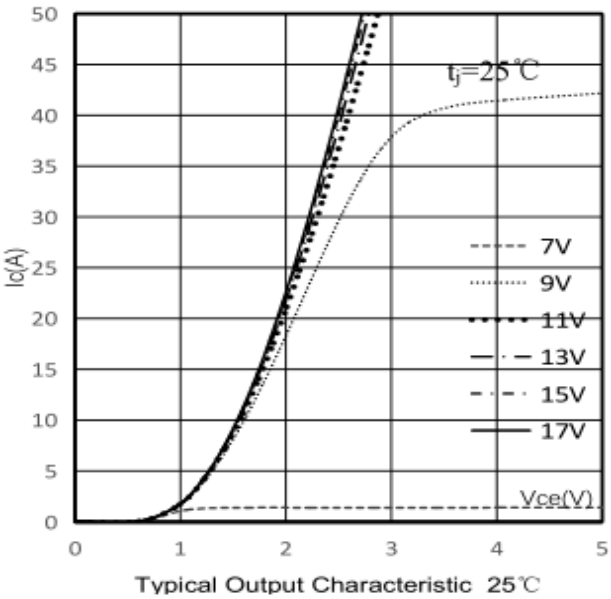
二极管特性Diode characteristics						
项目 **Parameter**	符号 **Symbol**	测试条件 **Tests**	最小 **Min**	典型 **Typ**	最大 **Max**	单位 **Units**
正向压降 Diode Forward Voltage	V_F	I_F=15A	-	1.5	1.85	V
		I_F=25A	-	1.7	2.2	
反向恢复时间 Reverse recovery time	trr	I_F=25A , V_R=600V, V_{GE}=15V, RG=10Ω, T_J =25°C	-	157	-	ns
反向恢复电流 Reverse recovery current	Irrm		-	27.2	-	A
反向恢复电荷 Reverse recovery charge	Qrr		-	2370	-	nC
反向恢复时间 Reverse recovery time	trr	I_F=25A , V_R=600V, V_{GE}=15V, RG=10Ω, T_J=150°C	-	270	-	ns
反向恢复电流 Reverse recovery current	Irr		-	33	-	A
反向恢复电荷 Reverse recovery charge	Qrr		-	4260	-	nC

热特性 THERMAL CHARACTERISTIC

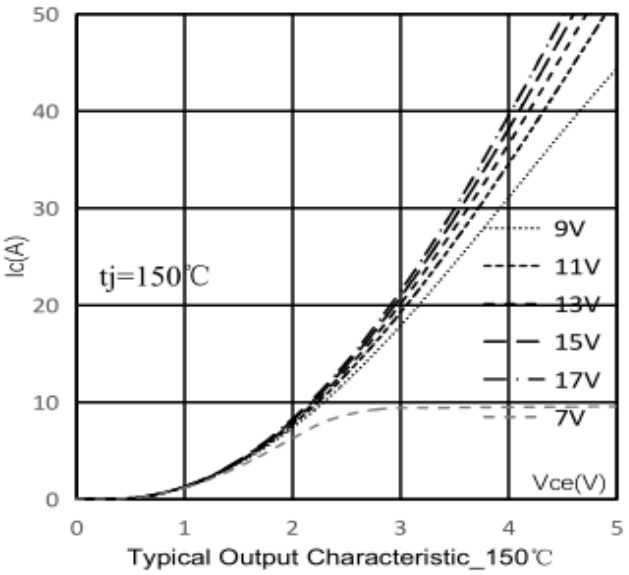
项目 **Parameter**	符号 **Symbol**	数 值 **Value**	单位 **Unit**
结到管壳的热阻 (IGBT) Thermal Resistance, Junction to Case (IGBT)	Rth(j-c)	0.40	℃/W
结到管壳的热阻 (FRD) Thermal Resistance, Junction to Case (Diode)	Rth(j-c)	1.32	℃/W
结到环境的热阻 Thermal Resistance, Junction to Ambient	Rth(j-A)	40	℃/W



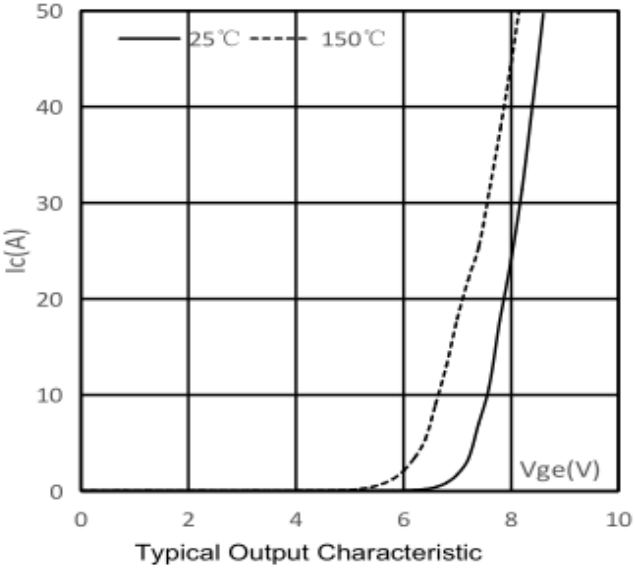
P_{tot} as a function of case Temperature



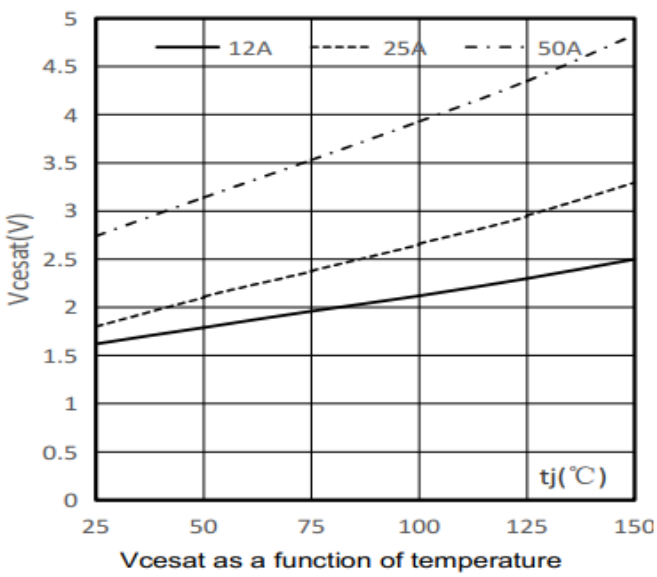
Typical Output Characteristic 25℃



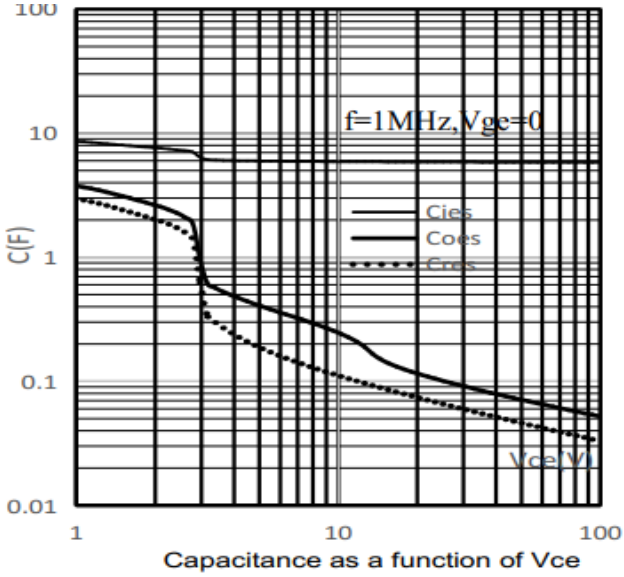
Typical Output Characteristic_150℃



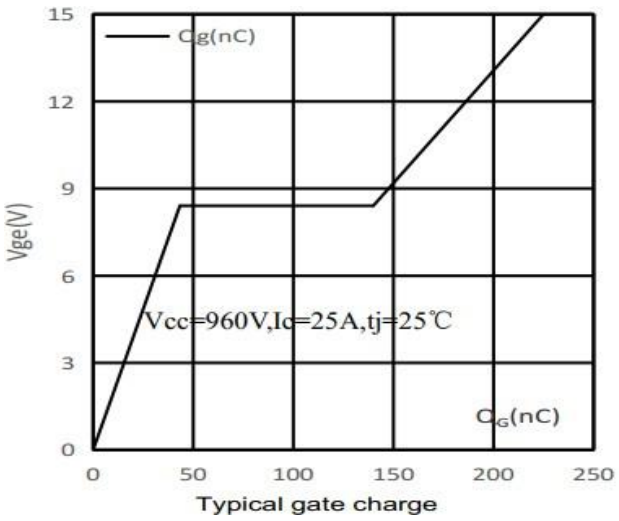
Typical Output Characteristic

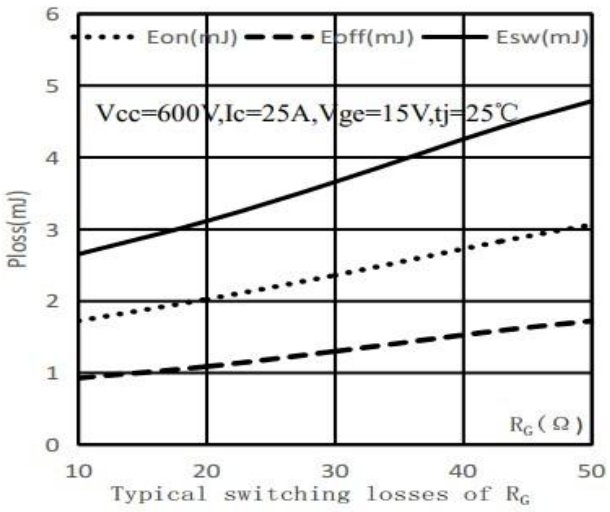


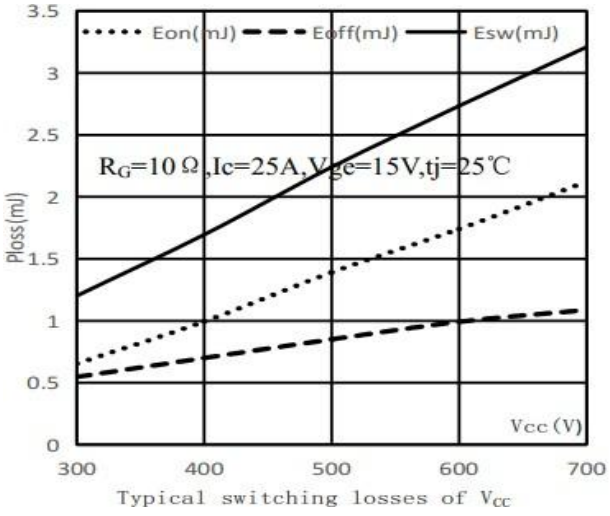
Vcesat as a function of temperature

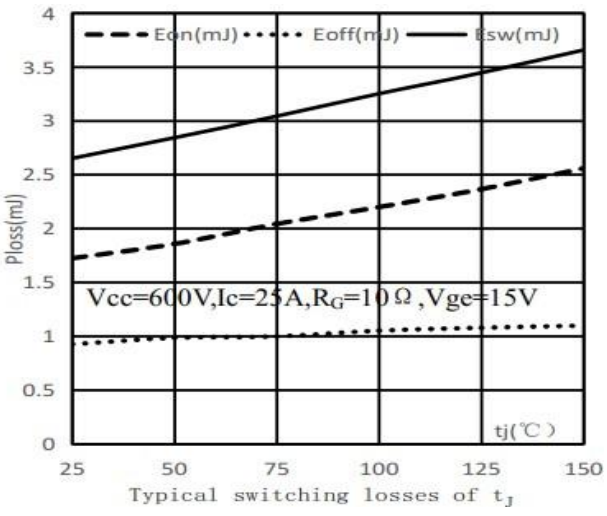


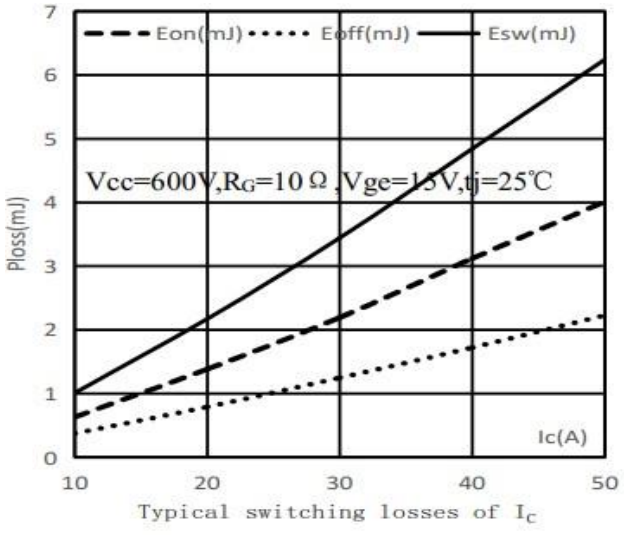
Capacitance as a function of Vce

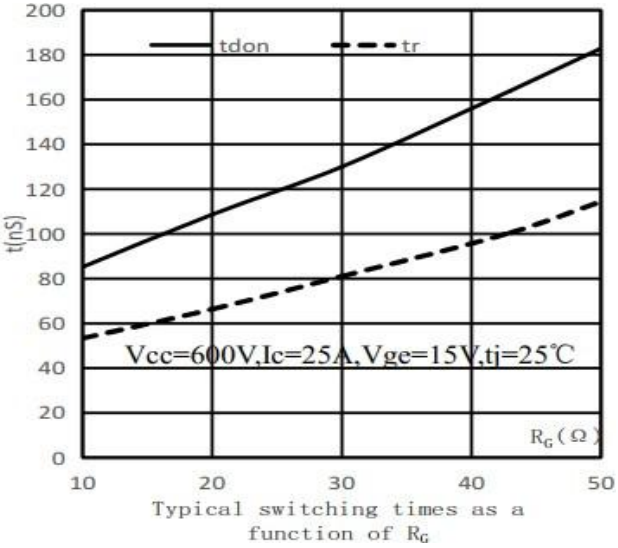

Qg(nC)
Vge(V)
Vcc=960V,Ic=25A,tj=25℃
Q_G(nC)
Typical gate charge

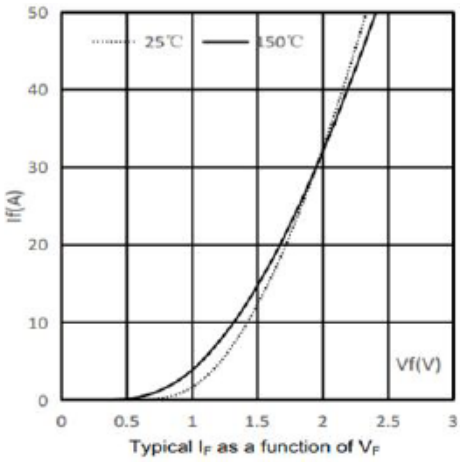

Eon(mJ)
Eoff(mJ)
Esw(mJ)
Vcc=600V,Ic=25A,Vge=15V,tj=25℃
Ploss(mJ)
R_G(Ω)
Typical switching losses of R_G


Eon(mJ)
Eoff(mJ)
Esw(mJ)
R_G=10Ω,Ic=25A,Vge=15V,tj=25℃
Ploss(mJ)
Vcc(V)
Typical switching losses of V_{CC}

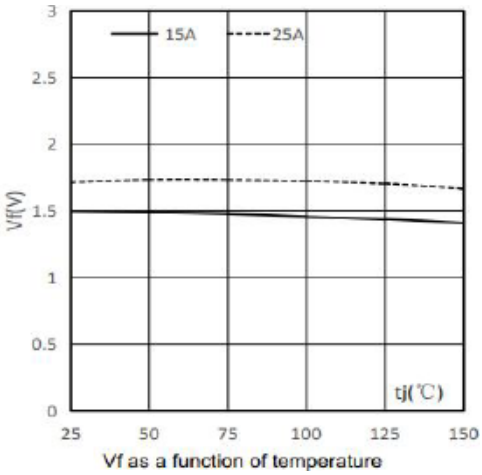

Eon(mJ)
Eoff(mJ)
Esw(mJ)
Vcc=600V,Ic=25A,R_G=10Ω,Vge=15V
Ploss(mJ)
tj(℃)
Typical switching losses of t_J


Eon(mJ)
Eoff(mJ)
Esw(mJ)
Vcc=600V,R_G=10Ω,Vge=15V,tj=25℃
Ploss(mJ)
Ic(A)
Typical switching losses of I_C


tdon
tr
Vcc=600V,Ic=25A,Vge=15V,tj=25℃
t(nS)
R_G(Ω)
Typical switching times as a function of R_G

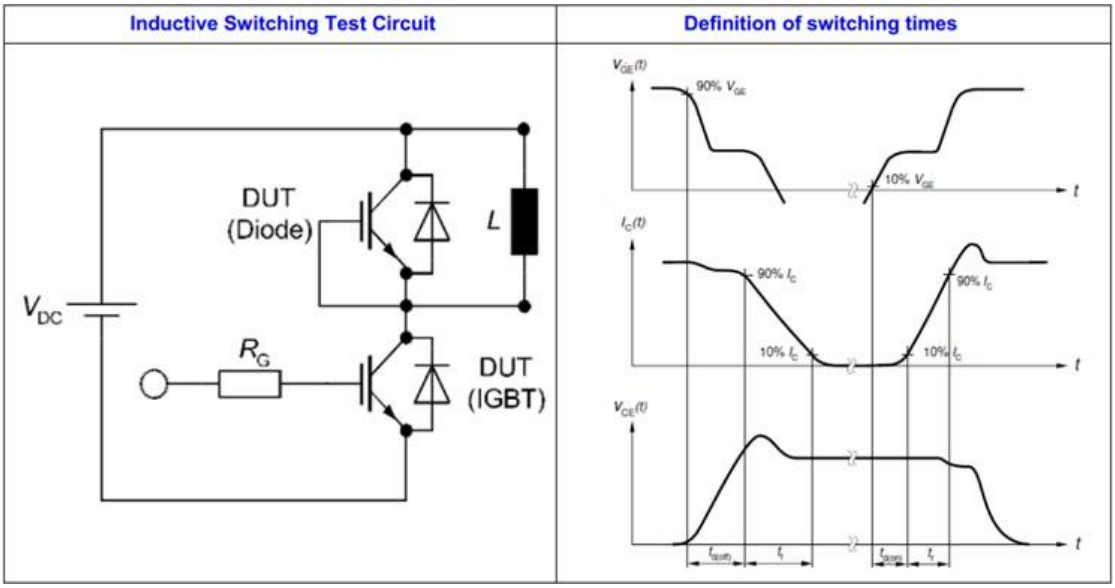


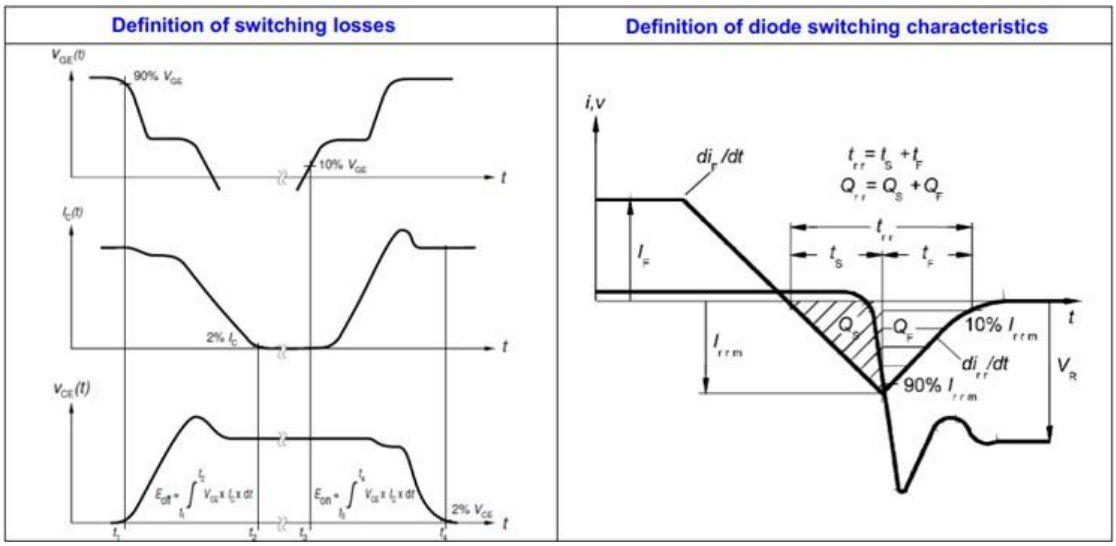
Typical I_F as a function of V_F



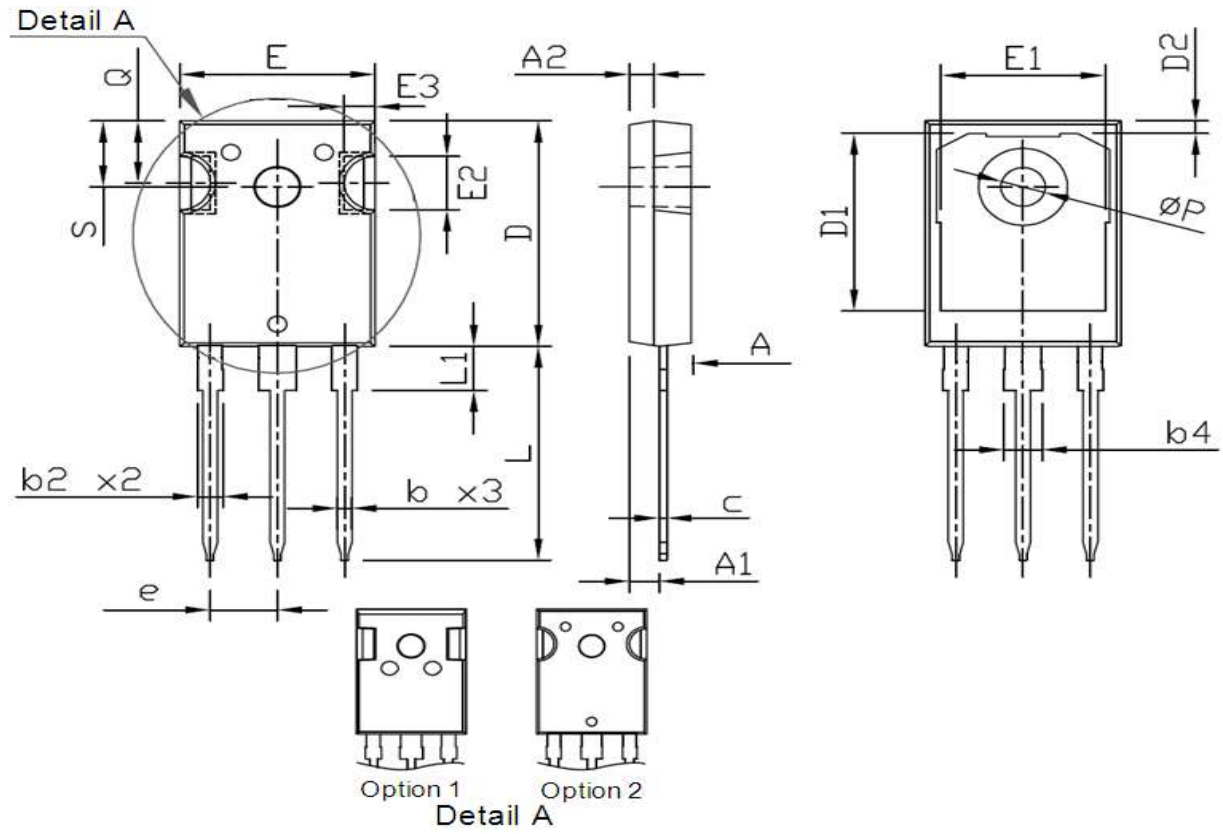
Vf as a function of temperature

Test Circuit and Waveform





Package Mechanical Data-TO-247 Single



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.70	5.30	0.185	0.209
A1	2.20	2.60	0.087	0.102
A2	1.50	2.49	0.059	0.098
b	1.04	1.33	0.041	0.052
b2	1.90	2.41	0.075	0.095
b4	2.87	3.43	0.113	0.135
c	0.55	0.70	0.022	0.028
D	20.70	21.30	0.815	0.839
D1	16.25	17.65	0.640	0.695
D2	0.51	1.40	0.020	0.055
e	5.44 BSC.		0.214 BSC.	
E	15.50	16.30	0.610	0.642
E1	13.08	14.16	0.515	0.557
E2	3.80	5.49	0.150	0.216
E3	1.00	2.75	0.039	0.108
L	19.72	20.32	0.776	0.800
L1	3.85	4.50	0.152	0.177
Q	5.25	6.25	0.207	0.246
P	3.50	3.70	0.138	0.146
S	6.04	6.30	0.238	0.248