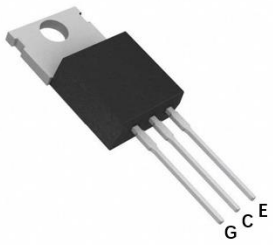
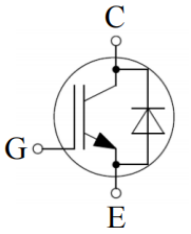
DGP15N65CTL0

IGBT Discrete



V_{CE}	650	V
I_C	15	A
$V_{CE(SAT)}$ I_C=15A	1.40	V

Circuit



Applications

Soft switching applications
Air conditioning
Motor drive inverter

Features

High speed smooth switching device for hard & soft switching
Maximum junction temperature 175
Positive temperature coefficient
High ruggedness, temperature stable

Maximum Ratings

Parameter	Symbol	Value	Unit
Collector-Emitter Breakdown Voltage	V_{CE}	650	V
DC Collector Current, limited by T_{jmax} T_C= 25°C T_C= 100°C	I_C	30 15	A
Diode Forward Current, limited by T_{jmax} T_C= 25°C T_C= 100°C	I_F	30 15	A
Continuous Gate-Emitter Voltage	V_{GE}	20	V
Transient Gate-Emitter Voltage (tp 10µs,D<0.010)	V_{GE}	30	V
Turn off Safe Operating Area V_{CE} 600V, T_j		45	A
Pulsed Collector Current, V_{GE}=15V, tp limited by T_{jmax}	I_{CM}	45	A
Short Circuit Withstand Time, VGE= 15V,	Tsc	5	
Diode Pulsed Current, tp limited by T_{jmax}	I_{Fpuls}	45	A
Power Dissipation , Tj=175°C,Tc=25°C	P_{tot}	110	W

Operating Junction Temperature	T_j	-40...+175	°C
Storage Temperature	T_s	-55...+150	°C
Soldering Temperature, wave soldering 1.6mm (0.063in.) from case for 10s		260	°C

Electrical Characteristics of the IGBT T_j= 25 unless otherwise specified

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Static						
Collector-Emitter Breakdown Voltage	BV_{CES}	V_{GE}=0V, I_C	650		-	V
Gate Threshold Voltage	$V_{GE(th)}$	V_{GE}=V_{CE}, I_C=1mA	5.0	5.8	6.5	V
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	V_{GE}=15V, I_C=15A T_j=25°C, T_j=125°C T_j=150°C		1.40 1.55 1.60	1.70	V
Zero Gate Voltage Collector Current	I_{CES}	V_{CE}=650V, V_{GE}=0V T_j= 25°C, T_j=150°C			0.25 1.00	mA
Gate-Emitter Leakage Current	I_{GES}	V_{CE}= 0V, V_{GE}= ± 20V			±200	nA

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Dynamic						
Input Capacitance	C_{ies}	V_{CE}= 25V, V_{GE}= 0V, f = 1MHz	-	0.88	-	nF
Output capacitance	C_{oes}		-	0.04	-	
Reverse Transfer Capacitance	C_{res}		-	0.01	-	
Gate Charge	Q_G	V_{CC}=300V,I_C=15A, V_{GE}=15V	-	0.069	-	uC
Short circuit collector current	$I_{C\ SC}$	V_{GE}=15V,t_{SC} 5us V_{CC}=400V, $T_{j\ start}$=25°C	-	110	-	A

Electrical Characteristics of the Diode T_j= 25 unless otherwise specified

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Static						
Diode Forward Voltage	V_F	I_F= 15A T_j= 25°C, T_j= 125°C T_j= 150°C		1.90 1.70 1.60	2.40	V

Switching Characteristic, Inductive Load

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Dynamic , at T_j= 25						
Turn-on Delay Time	$t_{d(on)}$	T_j=25°C V_{CC}= 300V, I_C=15A, V_{GE}=-5V~15V, Rg=51	-	10	-	ns
Rise Time	t_r		-	28	-	ns
Turn-on Energy	E_{on}		-	0.33	-	mJ
Turn-off Delay Time	$t_{d(off)}$		-	68	-	ns
Fall Time	t_f		-	138	-	ns
Turn-off Energy	E_{off}		-	0.16	-	mJ
Dynamic , at T_j= 125						
Turn-on Delay Time						

www.21yangjie.com

Electrical Characteristics of the DIODE

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Dynamic , at T_j= 25						
Reverse Recovery Current	I_{rr}	I_F=15A V_R=300V, -di/dt= 380	-	6	-	A
Diode reverse recovery time	trr		-	197	-	ns
Reverse Recovery Charge	Q_{rr}		-	0.24	-	uC
Reverse Recovery Energy	Erec		-	0.06	-	mJ
Dynamic , at Tj= 125						
Reverse Recovery Current	I_{rr}	I_F=15A V_R=300V, -di/dt= 380	-	7	-	A
Diode reverse recovery time	trr		-	213	-	ns
Reverse Recovery Charge	Q_{rr}		-	0.58	-	uC
Reverse Recovery Energy	Erec		-	0.11	-	mJ
Dynamic , at Tj= 150						
Reverse Recovery Current	I_{rr}	I_F=15A V_R=300V, -di/dt= 380	-	8	-	A
Diode reverse recovery time	trr		-	221	-	ns
Reverse Recovery Charge	Q_{rr}		-	0.71	-	uC
Reverse Recovery Energy	Erec		-	0.14	-	mJ

Thermal Resistance

Parameter	Symbol	Max. Value	Unit
IGBT Thermal Resistance, Junction - Case	R_{th}(j-c)	1.35	K/W
Diode Thermal Resistance, Junction - Case	R_{th}(j-c)	1.5	K/W
Thermal Resistance, Junction - Ambient	R_{th}(j-a)	60	K/W

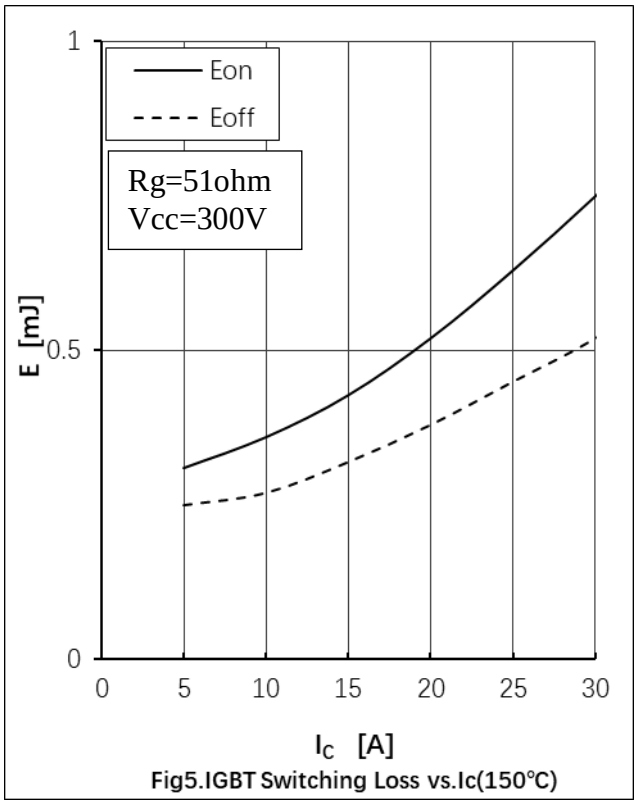
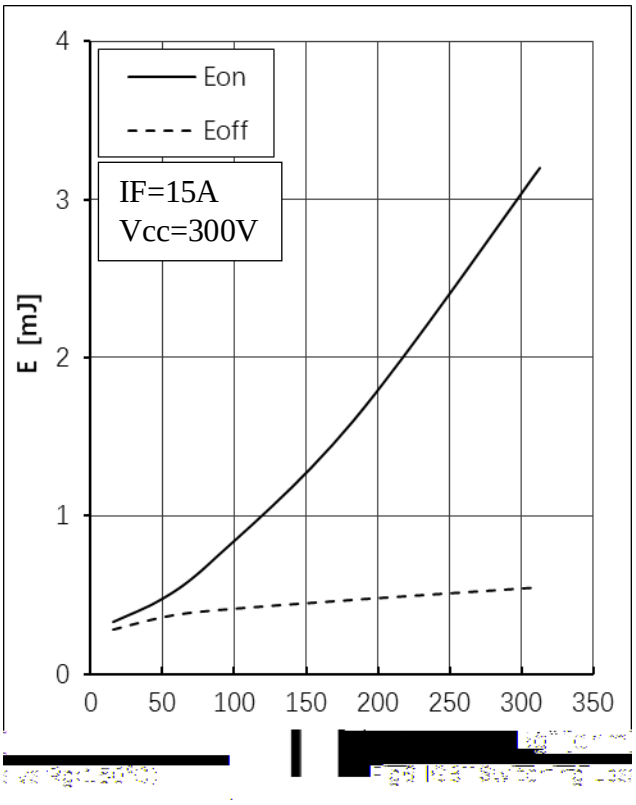


Fig5.IGBT Switching Loss vs.Ic(150℃)



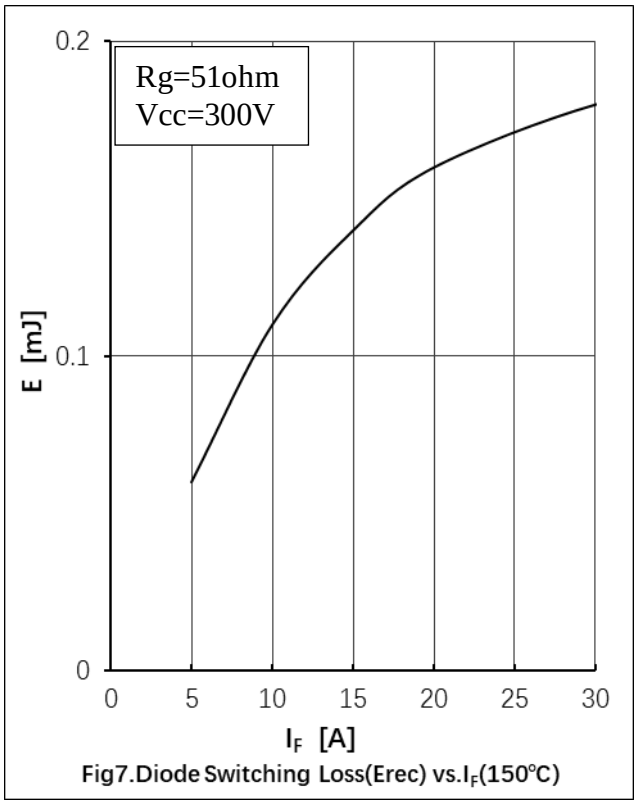


Fig7.Diode Switching Loss(Erec) vs.I_F(150℃)

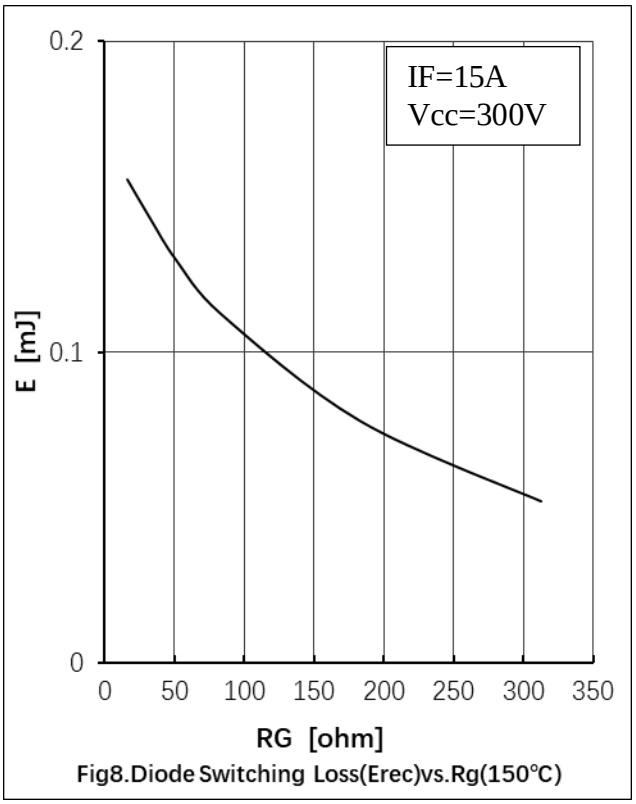
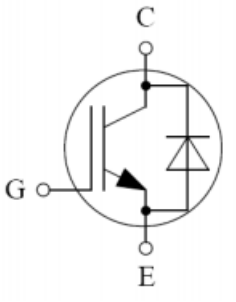


Fig8.Diode Switching Loss(Erec)vs.Rg(150℃)

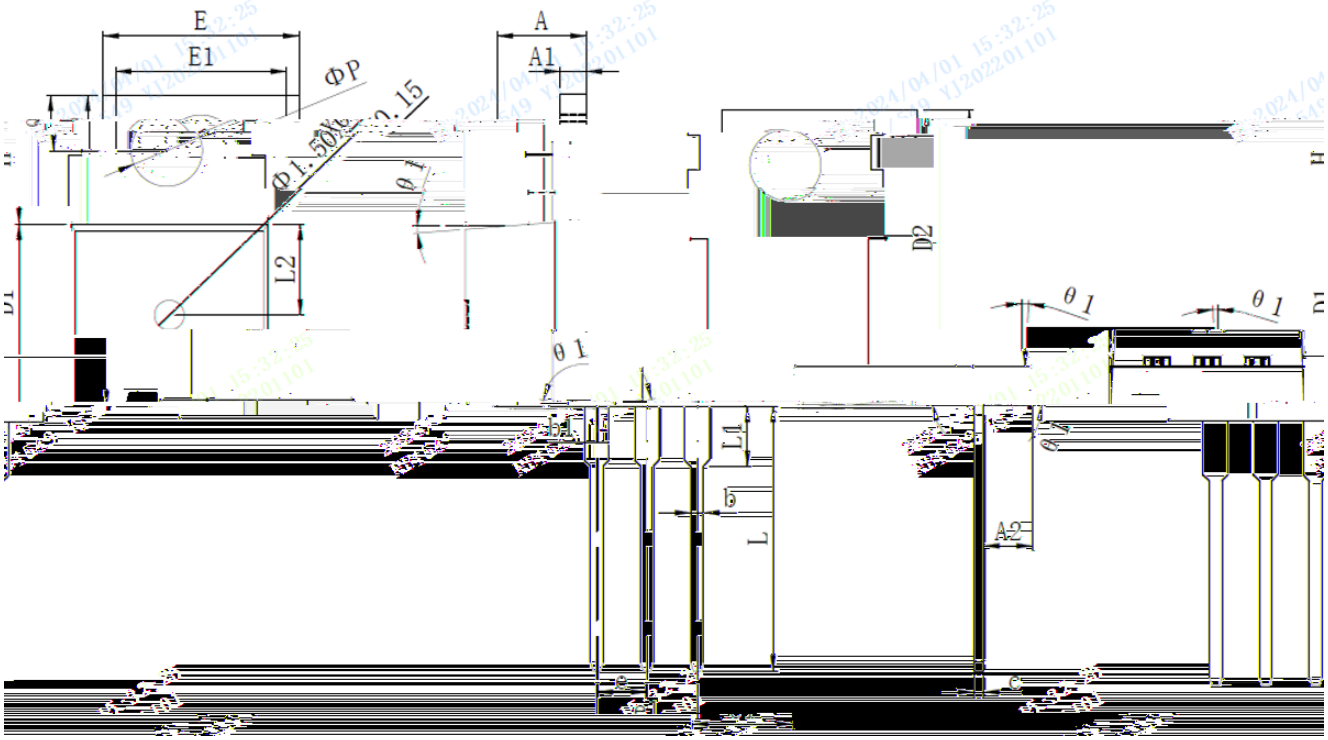
"





Package Outline Information

CASE: TO-220 package information



SYMBOL	单位：mm			SYMBOL	单位：mm		
	MIN	NOM	MAX		MIN	NOM	MAX
A	4.40	4.50	4.60	e1		5.08REF	

Disclaimer

The information presented in this document is for reference only. Yangzhou Yangjie Electronic Technology Co., Ltd. reserves the right to make changes without notice for the specification of the products displayed herein to improve reliability, function or design or otherwise.

The product listed herein is designed to be used with ordinary electronic equipment or devices, and not designed to be used with equipment or devices which require high level of reliability and the malfunction of with would directly endanger human life (such as aerospace machinery, nuclear-reactor controllers, fuel controllers and other safety devices), Yangjie or anyone on its behalf, assumes no responsibility or liability for any damages resulting from such improper use of sale.

This publication supersedes & replaces all information previously supplied. For additional information, please visit our website http:// www.21yangjie.com , or consult your nearest Yangjie's sales office for further assistance.