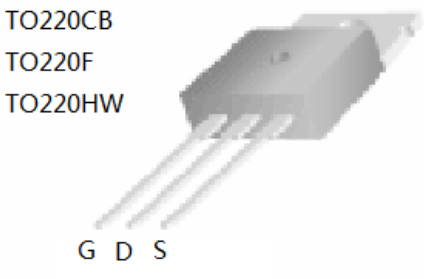
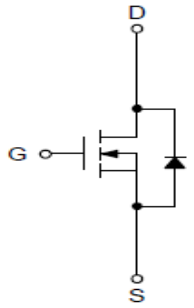
POWER MOSFET

Features

- 75V,80A N-Channel MOSFET
- $R_{DS(on)(typ.)}$=6.5mΩ @V_{GS}=10V,I_D=40A
- High ruggedness
- Fast switching
- 100% avalanche tested
- Exceptional dv/dt capability





N-Channel MOSFET

Applications

- Switching application

Absolute Maximum Ratings

Symbol	Parameter	Value	Units
V_{DSS}	Drain-Source Voltage	75	V
V_{GS}	Gate-Source Voltage	±25	V
I_D	Continuous Drain Current(TC=25℃)	80	A
	Continuous Drain Current(TC=100℃)	70	A
I_{DM}	Pulsed Drain Current(Note 1)	360	A
EAS	Single Pulsed Avalanche Energy(Note 2)	1200	mJ
P_D	Maximum Power Dissipation (T_C=25 ℃)	300	W
	Maximum Power Dissipation (T_C=100℃)	150	W
T_J	Operating Junction Temperature Range	-55 to +150	℃
T_{STG}	Storage Temperature Range	-55 to +150	℃

Notes:
1. Repetitive Rating: Pulse width limited by maximum junction temperature
2.Starting T_J=25℃,L=1.0mH,R_G=25Ω,I_D=37A,V_{GS}=10V

Thermal data

Symbol	Parameter	Max.	Units
$R_{th\ J\text{-}C}$	Thermal Resistance, Junction to case	0.6	℃/ W

Electrical Characteristics (T_C=25℃ unless otherwise noted)

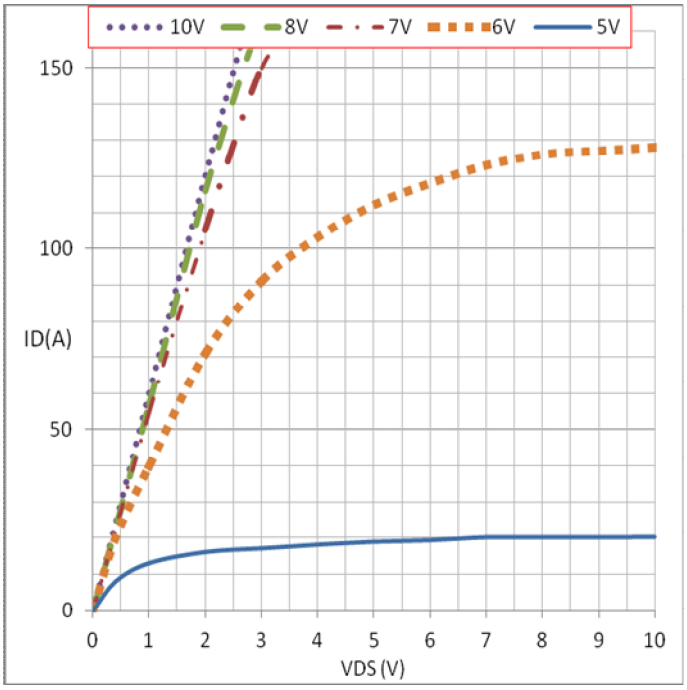
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=250uA	75			V
I_{DSSS}	Drain-Source Leakage Current	V_{DS}=75V, V_{GS}=0V			1	uA
I_{GSS}	Gate Leakage Current, Forward	V_{GS}=25V, V_{DS}=0V			100	nA
	Gate Leakage Current, Reverse	V_{GS}= -25V, V_{DS}=0V			-100	nA
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS}, I_D=250uA	2	3	4	V
$R_{DS(on)}$	Collector-Emitter Saturation Voltage	V_{GS}=10V, I_D=40A		6.5	9	mΩ
gfs	Forward Transconductance	V_{DS}=15V, I_D=30A		28		S
Q_g	Total Gate Charge	V_{DD}=60V V_{GS}=10V I_D=40A		89	120	nC
Q_{gs}	Gate-Source Charge			21		nC
Q_{gd}	Gate-Drain Charge			33		nC
$t_{d(on)}$	Turn-on Delay Time	V_{DD}=40V V_{GS}=10V I_D=40A R_G=5Ω	-	47	-	ns
t_r	Turn-on Rise Time		-	25	-	ns
$t_{d(off)}$	Turn-off Delay Time		-	75	-	ns
t_f	Turn-off Fall Time		-	36	-	ns
C_{iss}	Input Capacitance	V_{DS}=30V V_{GS}=0V f = 1MHz	-	3600	-	pF
C_{oss}	Output Capacitance		-	480	-	pF
C_{rss}	Reverse Transfer Capacitance		-	180	-	pF
R_{Gint}	Integrated gate resistor			1.24		Ω

Source-Drain Ratings and Characteristics (T_C=25℃ unless otherwise noted)

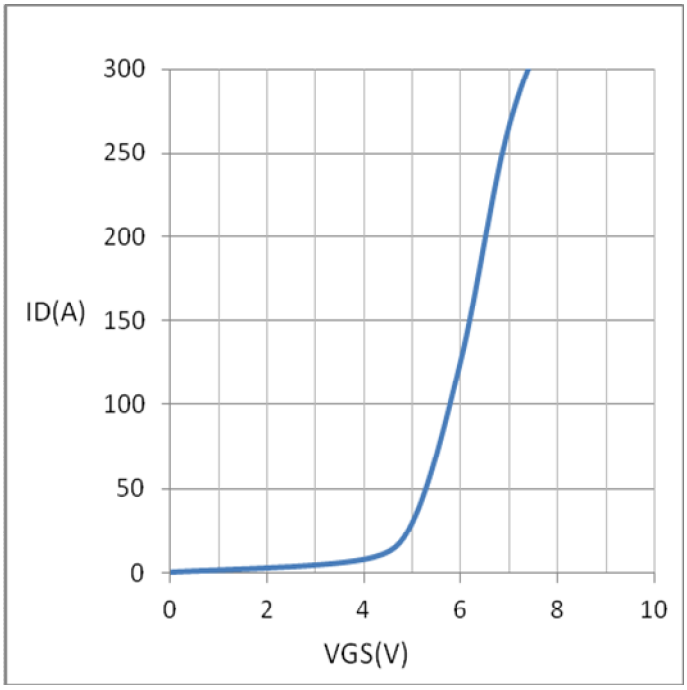
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
V_{SD}	Forward On Voltage	V_{GS}=0V,I_S=40A	-	0.88	1.2	V
I_S	Continuous Diode Forward Current				80	A
t_{rr}	Reverse Recovery Time	V_{DD}=25V,I_S=40A dI_F/dt=100A/us	-	64		ns
Q_{rr}	Reverse Recovery Charge		-	138		nC

Typical characteristics

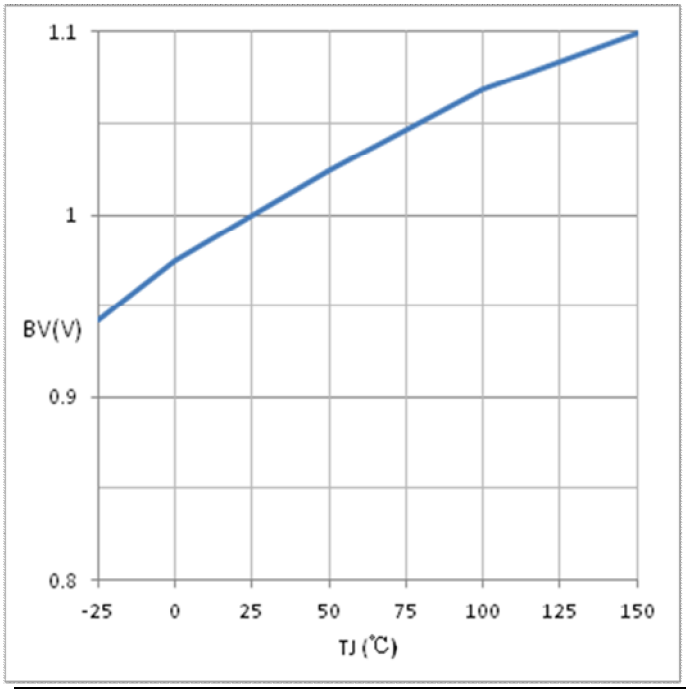
Output characteristics



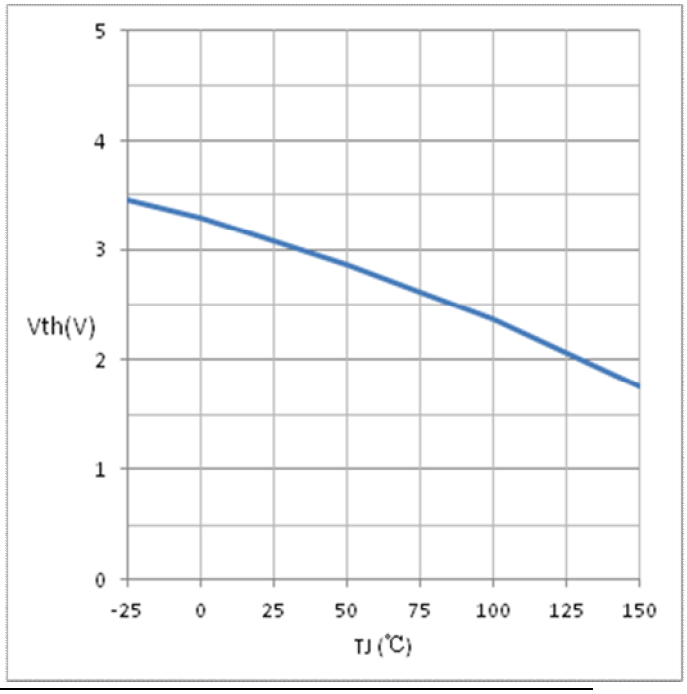
Transfer characteristics



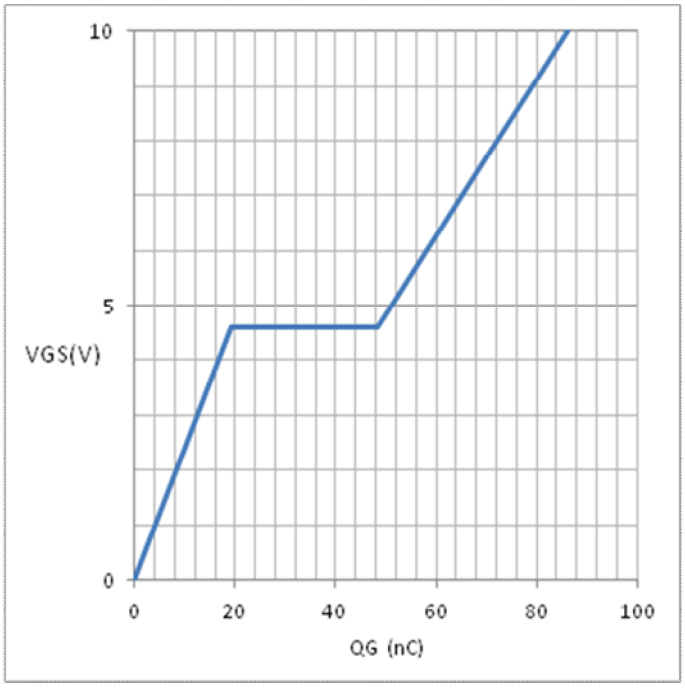
Normalized Bvdss vs temperature



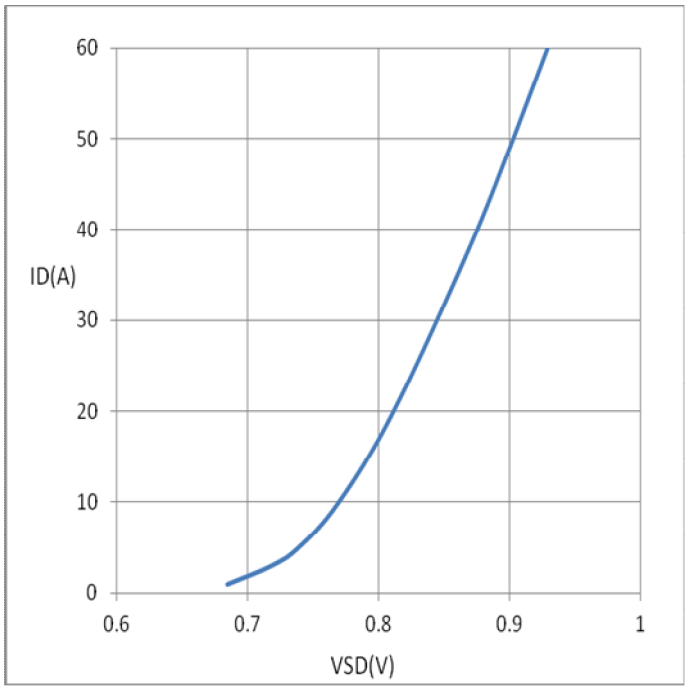
Vth vs temperature



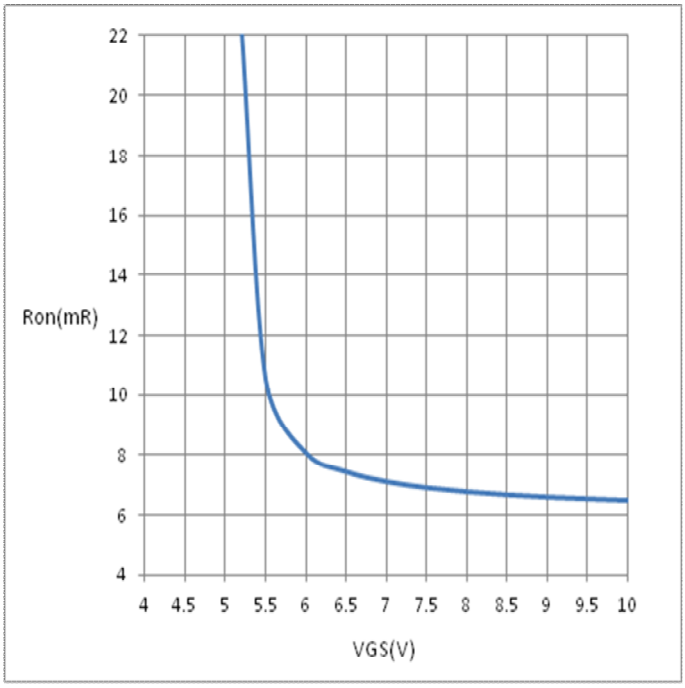
Gate charge vs Gate-source Voltage



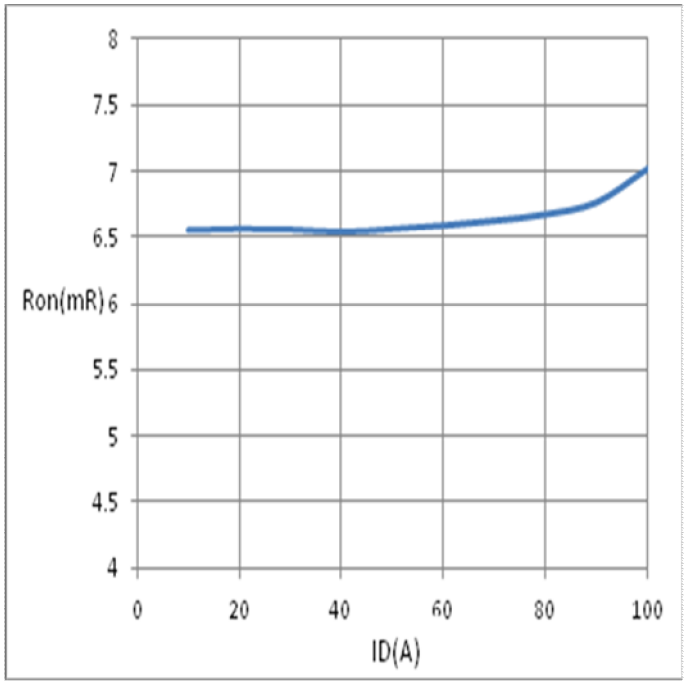
Source-drain diode forward



Drain-source on resistance vs Vgs

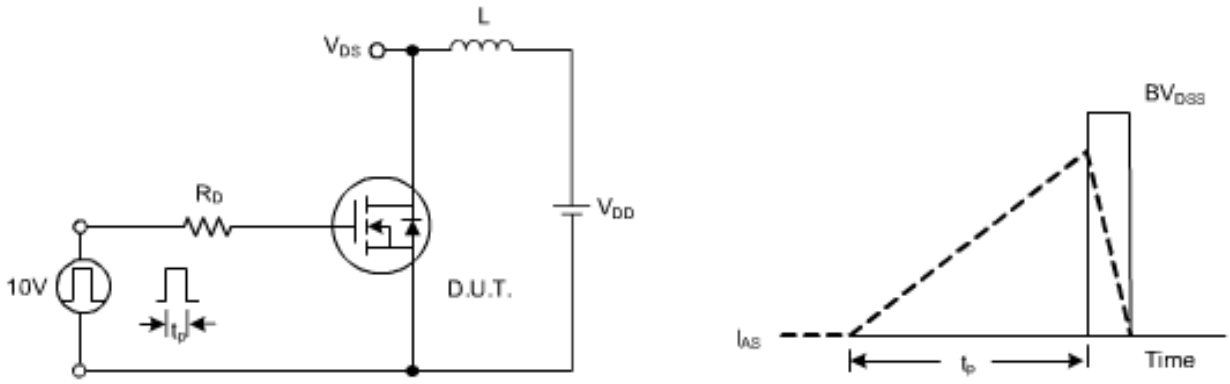


Drain-source on resistance vs ID

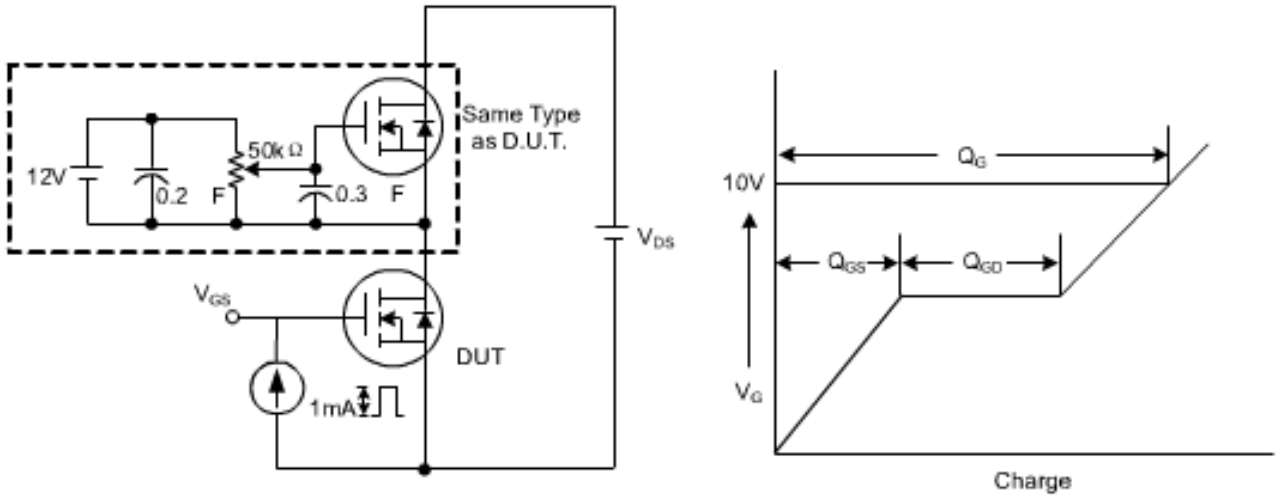


Test Circuits

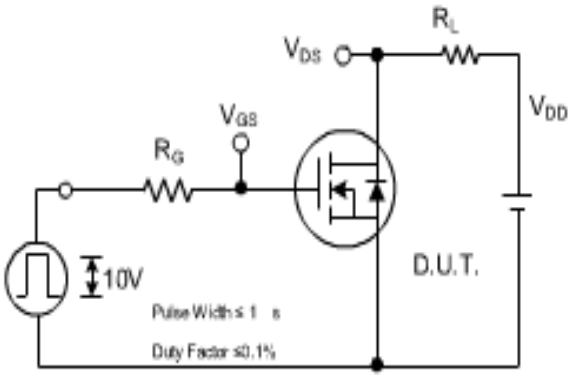
Avalanche test circuits and waveforms

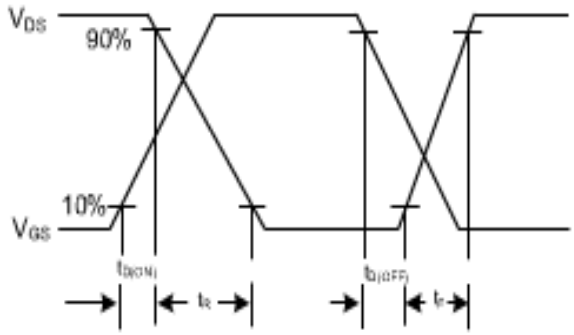


Gate charge test circuits and waveforms



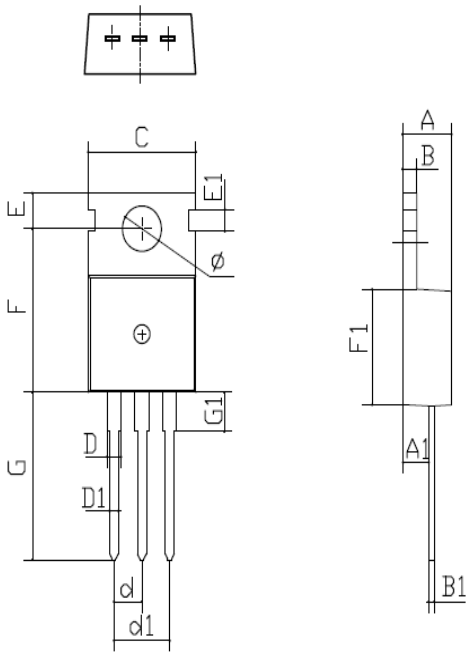
Switching time test circuits and waveforms





TO220CB package outline

TO-220CB



Symbol	Min	Max	Min	Max
	Dimensions In Millimeters		Dimensions In Inches	
ø	3.560	3.640	0.140	0.143
G1	2.990	3.190	0.118	0.126
G	13.090	13.290	0.515	0.523
F1	9.200	9.400	0.362	0.370
F	12.560	12.760	0.495	0.502
E1	1.700 TYP		0.067 TYP	
E	3.000 TYP		0.118 TYP	
d1	5.060	5.100	0.200	0.201
d	2.54 TYP		0.1 TYP	
D1	0.700	0.900	0.028	0.035
D	1.170	1.370	0.046	0.054
C	9.980	10.200	0.392	0.402
B1	0.485	0.515	0.019	0.020
B	1.285	1.315	0.051	0.052
A1	2.300	2.500	0.091	0.098
A	4.430	4.630	0.169	0.182

标记	处数	分区	更改文件号	签名	年月日
设计	QYL		标准化		
审核					

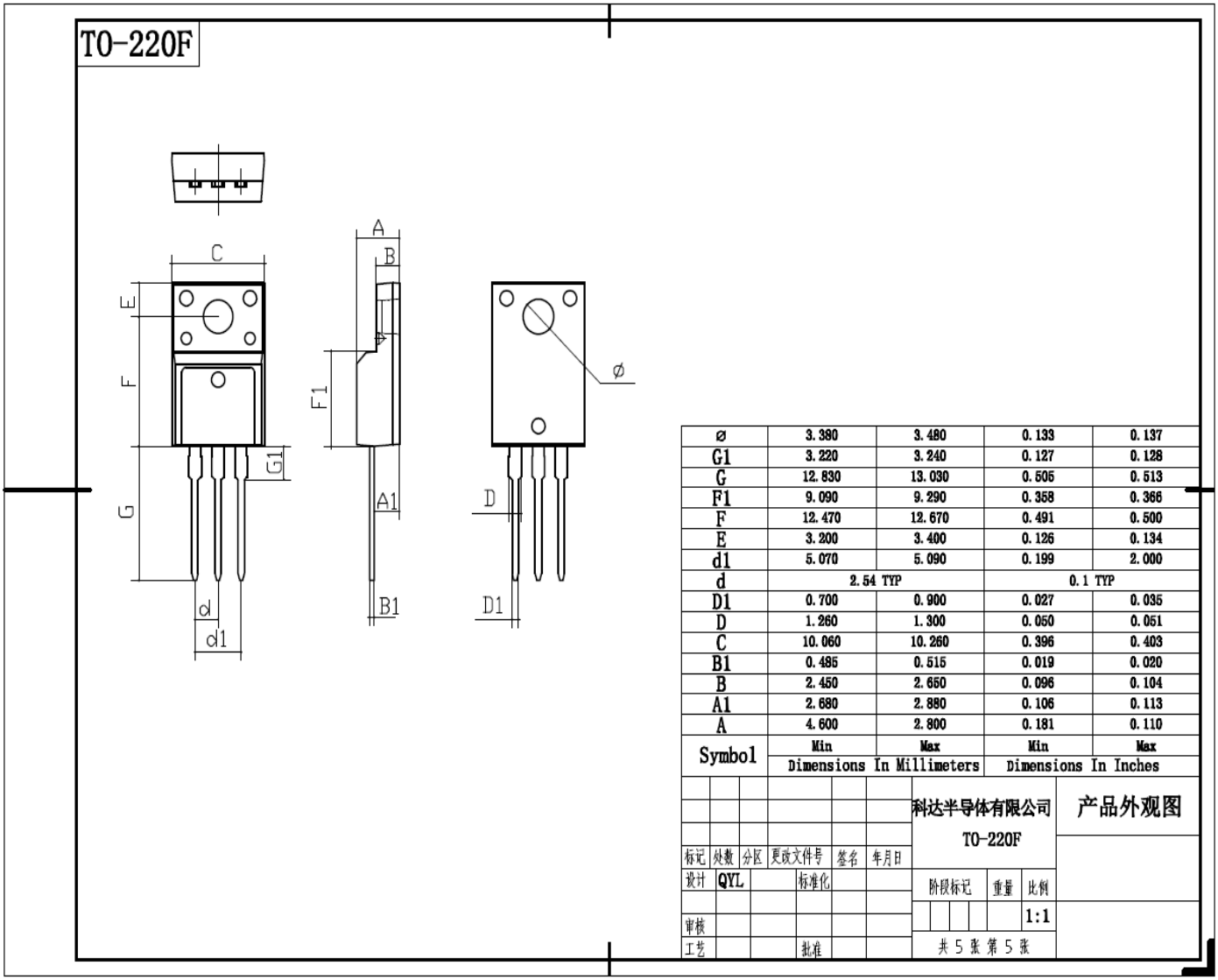
科达半导体有限公司
TO-220CB

产品外观图

阶段标记	重量	比例
		1:1

共 5 张 第 4 张

TO220F package outline



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	4.600	2.800	0.181	0.110
A1	2.680	2.880	0.106	0.113
B	2.450	2.650	0.096	0.104
B1	0.485	0.515	0.019	0.020
C	10.060	10.260	0.396	0.403
D	1.260	1.300	0.050	0.051
D1	0.700	0.900	0.027	0.035
d	2.54 TYP		0.1 TYP	
d1	5.070	5.090	0.199	2.000
E	3.200	3.400	0.126	0.134
F	12.470	12.670	0.491	0.500
F1	9.090	9.290	0.358	0.366
G	12.830	13.030	0.505	0.513
G1	3.220	3.240	0.127	0.128
ø	3.380	3.480	0.133	0.137

标记	处数	分区	更改文件号	签名	年月日
设计	QYL		标准化		
审核					
工艺			批准		

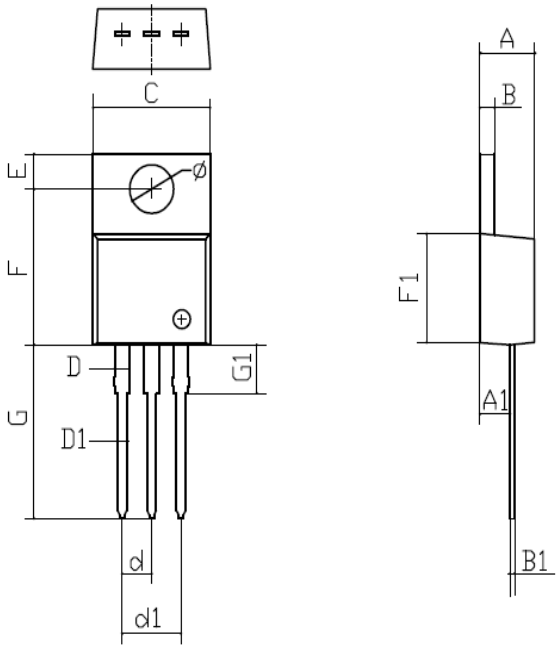
科达半导体有限公司 TO-220F 产品外观图

阶段标记 重量 比例 1:1

共 5 张 第 5 张

TO220HW package outline

TO-220HW



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	4.600	4.800	0.181	0.190
A1	2.550	2.650	0.100	0.104
B	1.250	1.290	0.049	0.051
B1	0.370	0.390	0.014	0.015
C	10.050	10.250	0.395	0.404
D	1.260	1.280	0.063	0.050
D1	0.700	0.900	0.028	0.035
d	2.54 TYP		0.1 TYP	
d1	5.060	5.100	0.200	0.201
E	2.640	2.840	0.104	0.112
F	3.400	3.600	0.134	0.142
F1	8.600	8.800	0.339	0.346
G	13.100	14.100	0.516	0.555
G1	3.780	3.820	0.149	0.150
ø	3.800	3.880	0.150	0.152

					科达半导体有限公司		产品外观图
					TO-220HW		
标记	处数	分区	更改文件号	签名	年月日		
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审核					共 5 张 第 3 张		
工艺			批准				

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