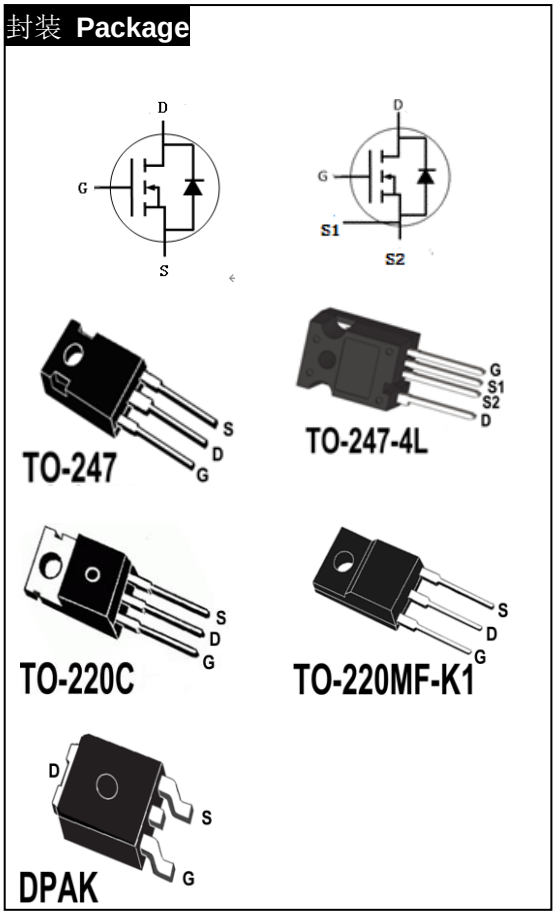
MG080R090B

主要参数 MAIN CHARACTERISTICS

I_D	37A
V_{DS}	850V
Rdson-typ (@Vgs=15V)	80mΩ
Qg-typ	32.2nC

封装 Package



用途 APPLICATIONS

- ●空调 ●Air-conditioning
- ●开关模式电源 ●Switch Mode Power Supplies
- ●高压 DC/DC 转换器 ●High Voltage DC/DC Converters
- ●电动自行车充电器 ●E-bike Chargers
- ●适配器 ●Adapter

产品特性 FEATURES

- ●高阻断电压 ●High Blocking Voltage
- ●低导通电阻 ●Low On-Resistance
- ●易于驱动 ●Easy to Parallel and Simple to Drive
- ●RoHS 产品 ●RoHS product

订货信息 ORDER MESSAGE

订货型号 Order codes				印记 Marking	封装 Package
有卤-条管 Halogen-Tube	无卤-条管 Halogen-Free-Tube	有卤-编带 Halogen-Reel	无卤-编带 Halogen-Free-Reel		
N/A	MG080R090B-GH-BR	N/A	N/A	MG080R090B	TO-247-4L
N/A	MG080R090B-GE-BR	N/A	N/A	MG080R090B	TO-247
N/A	MG080R090B-C-BR	N/A	N/A	MG080R090B	TO-220C
N/A	MG080R090B-F1-BR	N/A	N/A	MG080R090B	TO-220MF-K1
N/A	N/A	N/A	MG080R090B-R-AR	MG080R090B	DPAK

绝对最大额定值 ABSOLUTE RATINGS (Tc=25℃)

项 目 Parameter	符 号 Symbol	数 值 Value	单 位 Unit	测试条件 Tests conditions
最高漏极－源极直流电压 Drain-Source Voltage	V_{DSmax}	850	V	V_{GS}=0V, I_D=100μA
最高栅源电压 Gate-Source Voltage	V_{GSmax}	-10/+22	V	Absolute maximum values
工作栅源电压 Gate-Source Voltage	V_{GSop}	0/+15	V	Recommended operational values
连续漏极电流 Drain Current -continuous	I_D	37	A	V_{GS}=15V, T_C=25℃
		26	A	V_{GS}=15V, T_C=100℃
最大脉冲漏极电流 Drain Current - pulse	I_{DM}	81	A	Pulse width t_p limited by T_{jmax}
耗散功率 Power Dissipation	P_D	140 129 95 58	W	T_C=25℃ TO-247 T_C=25℃ TO-220C T_C=25℃ DPAK T_C=25℃ TO-220MF-K1
单脉冲雪崩能量 Single Pulsed Avalanche Energy	E_{AS}	72.6	mJ	L=0.5mH, I_{AS}= 17A, V_{DD}=50V, V_{GS}=15 V
最高结温及存储温度 Operating and Storage Temperature Range	T_J, T_{STG}	-55～+175	℃	
引线最高焊接温度 Maximum Lead Temperature for Soldering Purposes	T_L	260	℃	

电特性 ELECTRICAL CHARACTERISTICS

项　　目 Parameter	符　号 Symbol	测试条件 Tests conditions	最小 Min	典型 Typ	最大 Max	单位 Units
漏一源击穿电压 Drain-Source Voltage	BV_{DSS}	I_D=100μA, V_{GS}=0V	850	-	-	V
阈值电压 Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D=5mA, T_C=25℃	2.6	3.3	4.0	V
		V_{DS} = V_{GS}, I_D=5mA, T_C=175℃	-	2.3	-	V
零栅压下漏极漏电流 Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=850V, V_{GS}=0V, T_C=25℃	-	1	50	μA
栅极体漏电流 Gate-body leakage current	I_{GSS}	V_{DS}=-10V, V_{GS} =22V	-	5	250	nA
导通电阻 Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS} =18V , I_D=16.5A, T_C=25℃	-	60	80	mΩ
		V_{GS} =18V , I_D=16.5A, T_C=175℃	-	76	-	mΩ
		V_{GS} =15V , I_D=16.5A, T_C=25℃	-	80	100	mΩ
		V_{GS} =15V , I_D=16.5A, T_C=175℃	-	85	-	mΩ
跨导 Transconductance	g_{fs}	V_{DS} = 20V, I_D=16.5A, T_J = 25℃	-	12	-	S
输入电容 Input capacitance	C_{iss}	V_{DS}=500V, V_{GS} =0V, f=1MHz	-	960	-	pF
输出电容 Output capacitance	C_{oss}		-	60	-	pF
反向传输电容 Reverse transfer capacitance	C_{rss}		-	3	-	pF
导通开关能量 Turn-OnSwitching Energy	E_{ON}	V_{DS}=500V, V_{GS}=0/15V, I_D= 16.5A, $R_{G(ext)}$ =4.3Ω, L= 200μH	-	207	-	μJ
关断开关能量 Turn-OffSwitching Energy	E_{OFF}		-	28	-	
延迟时间 Turn-On delay time	td(on)	V_{DS}=500V, V_{GS}=-5/18V, I_D= 12.5A, $R_{G(ext)}$ = 10Ω, L= 200μH	-	24.6	-	ns
上升时间 Turn-On rise time	tr		-	11.7	-	ns
延迟时间 Turn-Off delay time	td(off)		-	18.0	-	ns
下降时间 Turn-Off Fall time	t_f		-	9.7	-	ns
栅电阻 Intrinsic gate resistance	R_G	f = 1 MHz , V_{AC}=25mV	-	3.4	-	Ω
栅一源电荷 Gate-Source charge	Q_{gs}	V_{DD}=500V, V_{GS}=-5/18V, I_D = 12.5A	-	10.3	-	nC
栅一漏电荷 Gate-Drain charge	Q_{gd}		-	3.4	-	
栅极电荷总量 Total Gate Charge	Q_g		-	32.2	-	

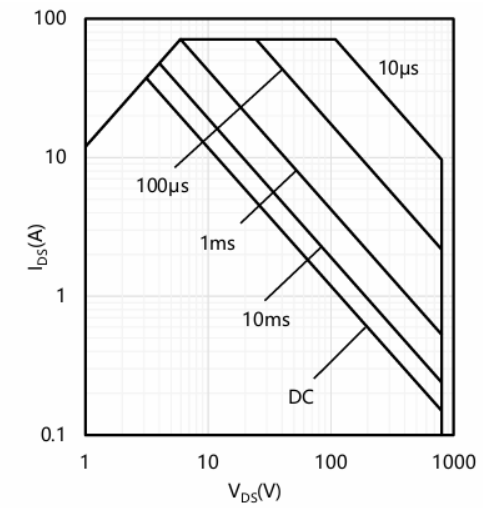
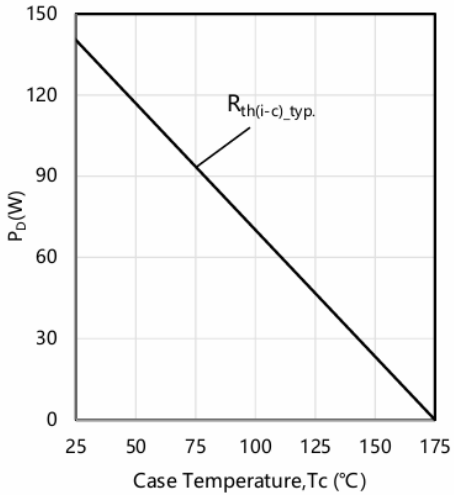
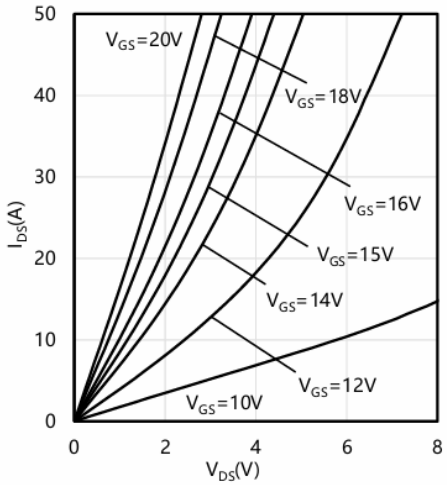
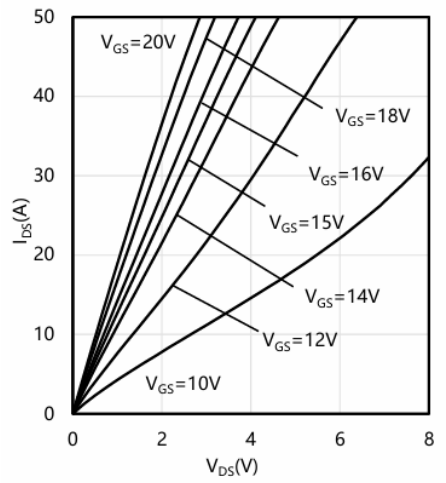
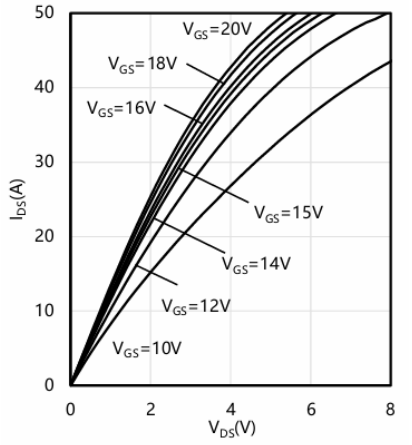
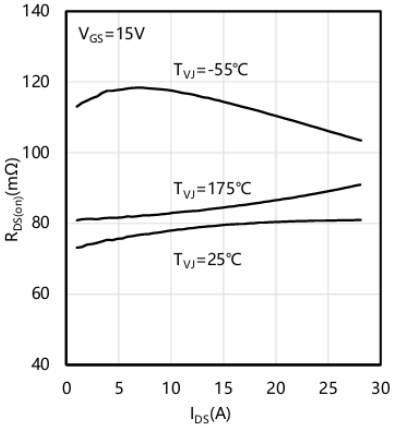
漏一源二极管特性 Drain-Source Diode Characteristics

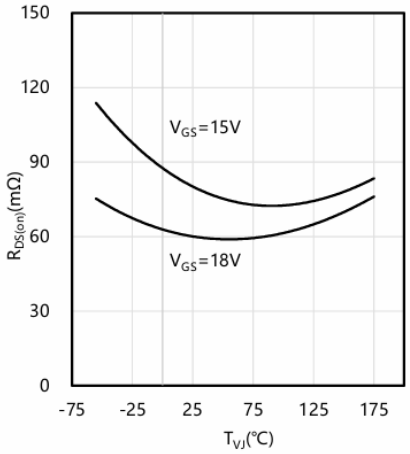
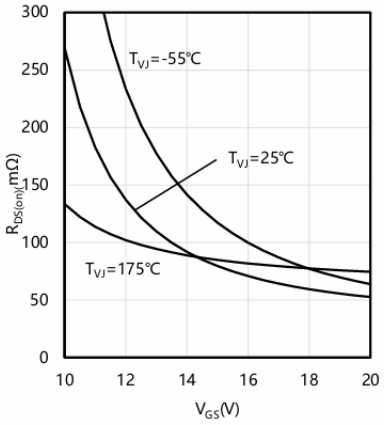
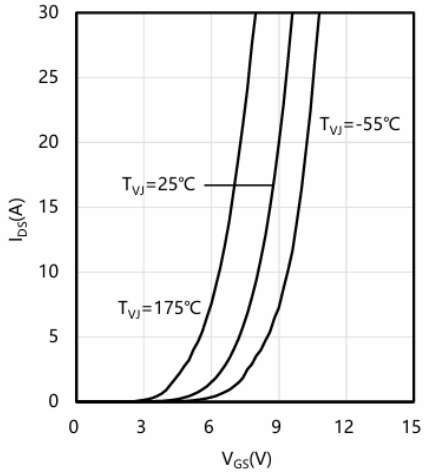
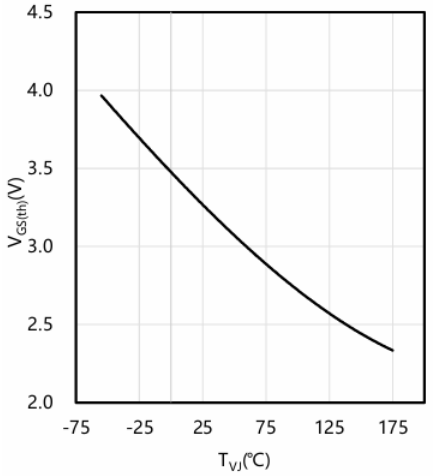
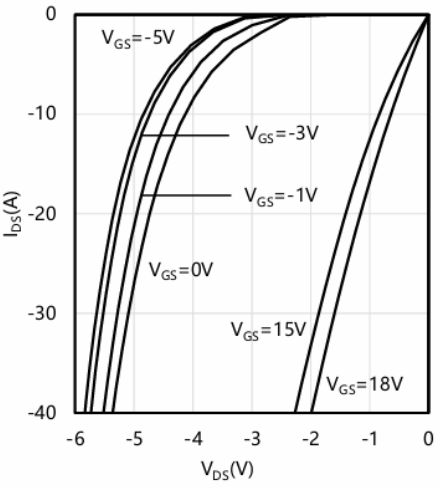
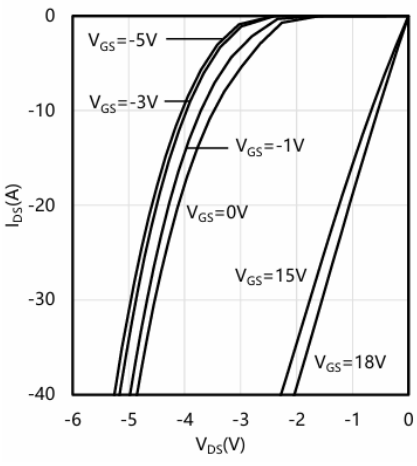
项　　目 Parameter	符　号 Symbol	测试条件 Tests conditions	典型 Typ	最大 Max	单位 Units
正向压降 Drain-Source Diode Forward Voltage	V_{SD}	V_{GS} =0V, I_{SD} = 8A, T_J = 25 ° C	3.3	-	V
		V_{GS} =0V, I_{SD} =8 A, T_J = 175 ° C	2.8	-	V
正向最大连续电流 Maximum Continuous Drain -Source Diode Forward Current	I_S	T_C=25℃ T_C=100℃	-	29 17	A A
反向恢复时间 Reverse recovery time	t_{rr}	V_{GS} =0V, I_{SD} =16.5 A, V_R=500V, dif/dt=950A/μs	16	-	ns
反向恢复电荷 Reverse recovery charge	Q_{rr}		81	-	nC
峰值反向恢复电流 Peak Reverse Recovery Current	I_{rrm}		9.3	-	A
反向恢复能量 Reverse Recovery Energy	E_{rr}		1.7	-	μJ

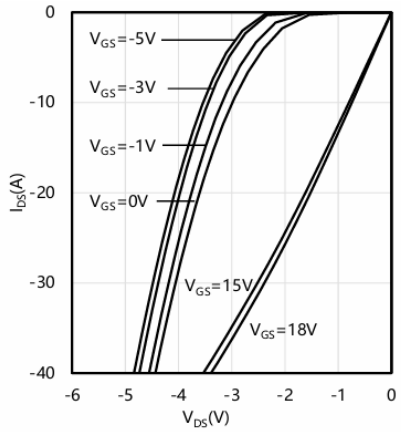
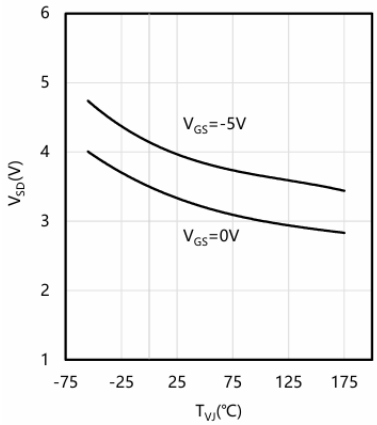
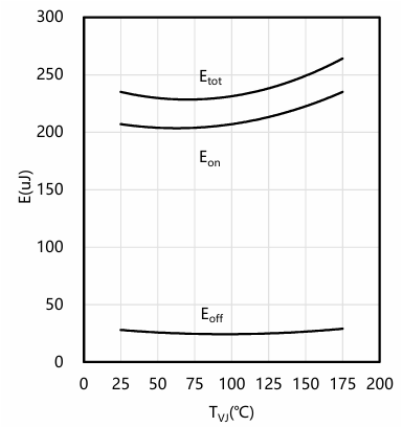
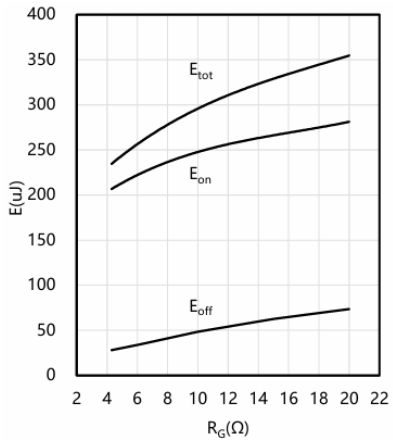
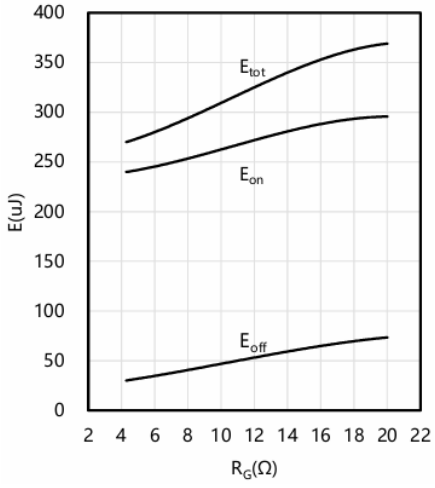
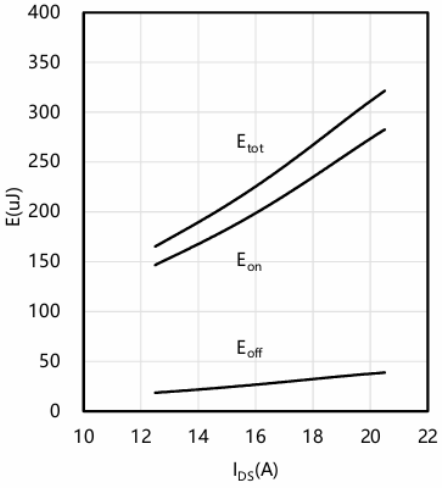
热特性 THERMAL CHARACTERISTIC

项　　目 Parameter	符　号 Symbol	典型 Typ		单位 Unit
结到管壳的热阻 Thermal Resistance, Junction to Case	Rth(j-c)	TO-247	1.07	℃/W
		TO-247-4L	1.07	
		TO-220C	1.16	
		DPAK	1.58	
		TO-220MF-K1	2.61	
结到环境的热阻 Thermal Resistance, Junction to Ambient	$R_{th(j-A)}$	40		℃/W

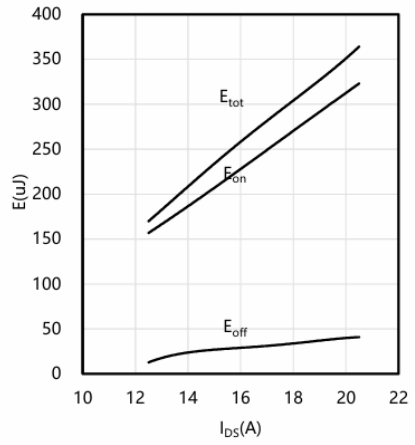
典型性能 Typical Performance

Safe operating area (SOA)	Power Derating (TO-247)
	
Typical output characteristic, V_{GS} as parameter T_{VJ} = -55 ℃	Typical output characteristic, V_{GS} as parameter T_{VJ} = 25 ℃
	
Typical output characteristic, V_{GS} as parameter T_{VJ} = 175 ℃	Typical on-state resistance as a function of drain current
	

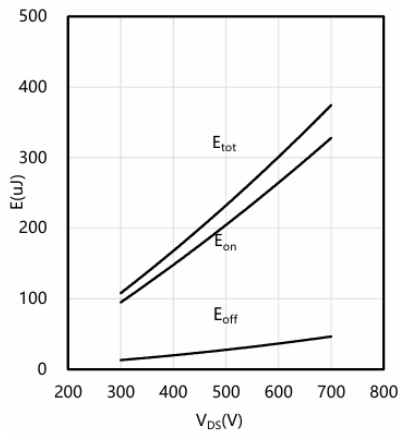
Typical on-state resistance as a function of temperature	Typical on-state resistance as a function of V_{GS}
	
Typical transfer characteristic	Typical gate-source threshold voltage as a function of junction temperature
	
Typical reverse drain current as function of reverse drain voltage, VGS as parameter $I_{DS} = f_{(VDS)}$, T_{VJ} = -55 ° C	Typical reverse drain current as function of reverse drain voltage, VGS as parameter $I_{DS} = f_{(VDS)}$, T_{VJ} = 25 ° C
	

Typical reverse drain current as function of reverse drain voltage, VGS as parameter $I_{DS} = f_{(VDS)}$, T_{VJ} = 175 ° C	Typical reverse drain voltage as function of junction temperature $V_{SD} = f_{(TVJ)}$, I_{SD} = 2 A
	
Typical switching energy as a function of junction temperature, 2nd device own body diode	Typical switching energy losses as a function of gate resistance, 2nd device own body diode T_{VJ} = 25 ° C
	
Typical switching energy losses as a function of gate resistance, 2nd device own body diode T_{VJ} = 175 ° C	Typical switching energy losses as a function of I_{DS}, 2nd device own body diode T_{VJ} = 25 ° C
	

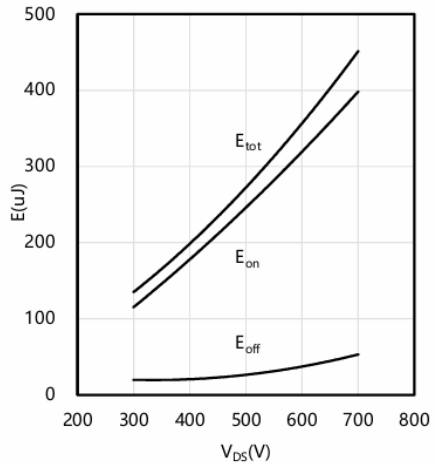
Typical switching energy losses as a function of I_{DS}, 2nd device own body diode T_{VJ} = 175 ° C



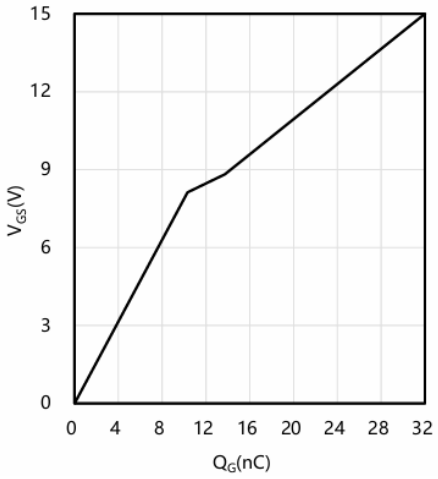
Typical switching energy losses as a function of V_{DS}, 2nd device own body diode T_{VJ} = 25 ° C



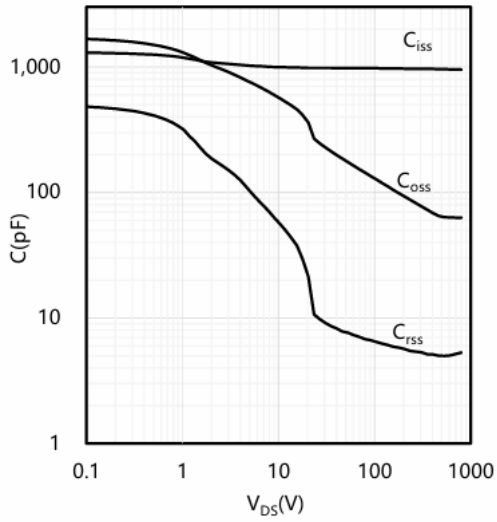
Typical switching energy losses as a function of V_{DS}, 2nd device own body diode T_{VJ} = 25 ° C



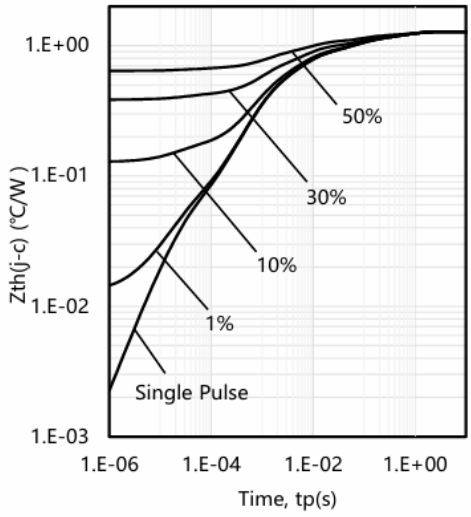
Typical gate charge

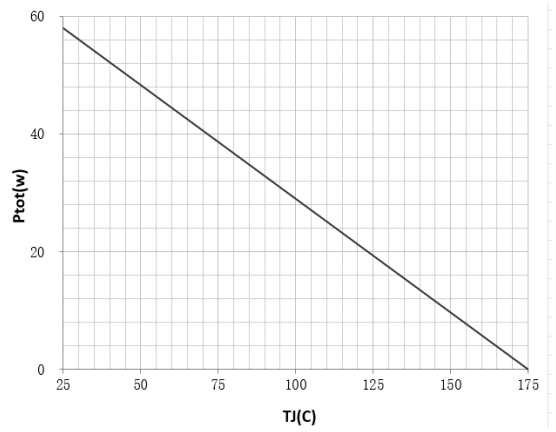
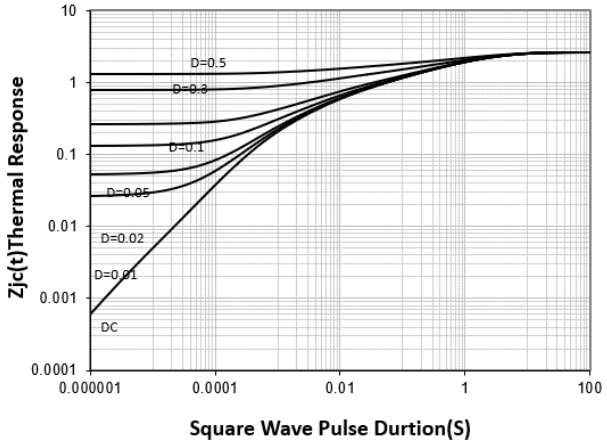
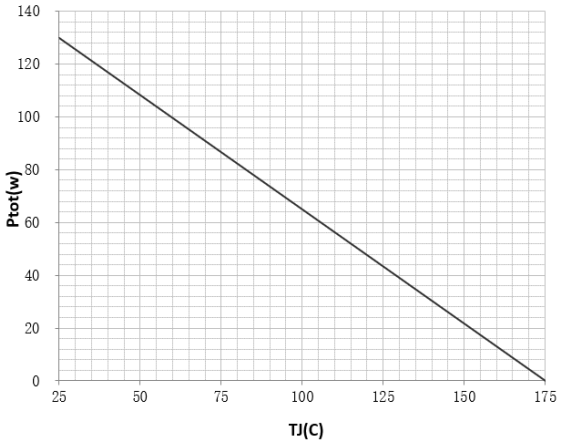
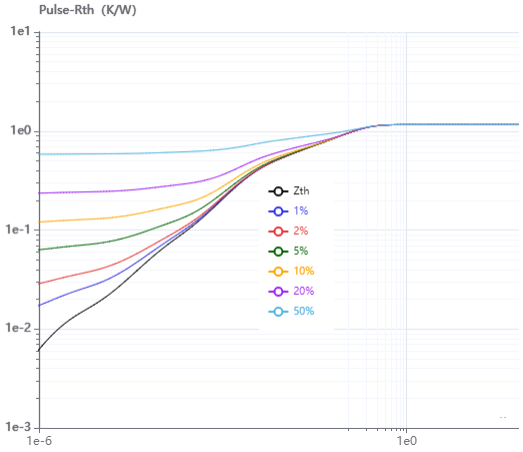
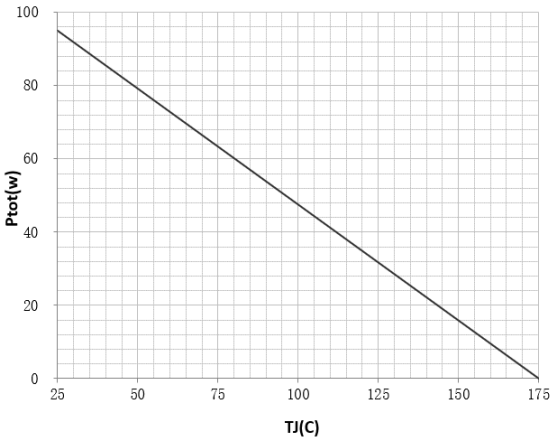
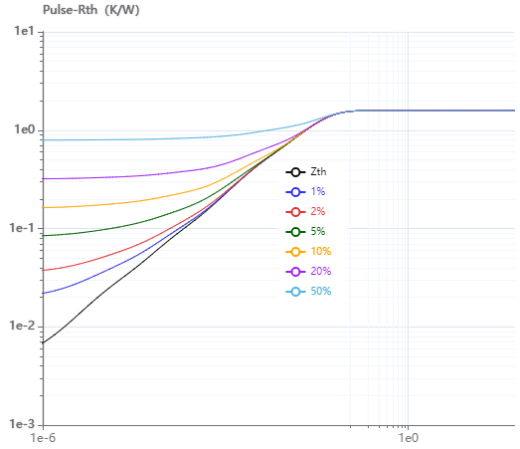


Typical capacitance as a function of drain-source voltage



Transient thermal resistance (TO-247)

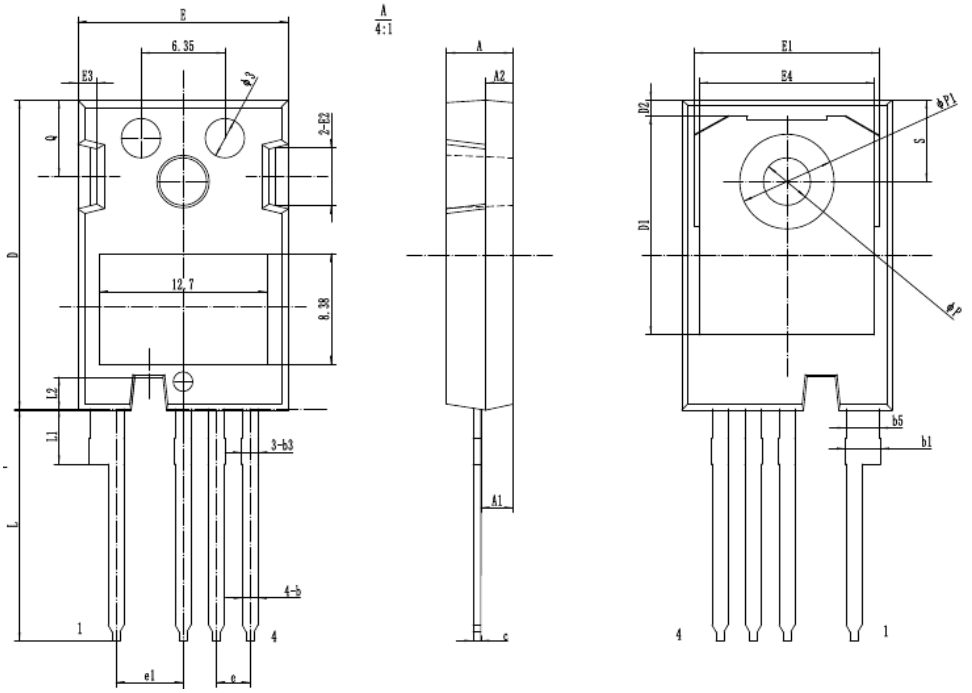


Power Derating (TO-220MF-K1)	Transient thermal resistance (TO-220MF-K1)
	
Power Derating (TO-220C)	Transient thermal resistance (TO-220C)
	
Power Derating (DPAK)	Transient thermal resistance (DPAK)
	

外形尺寸 PACKAGE MECHANICAL DATA

TO-247-4L

单位 Unit：mm

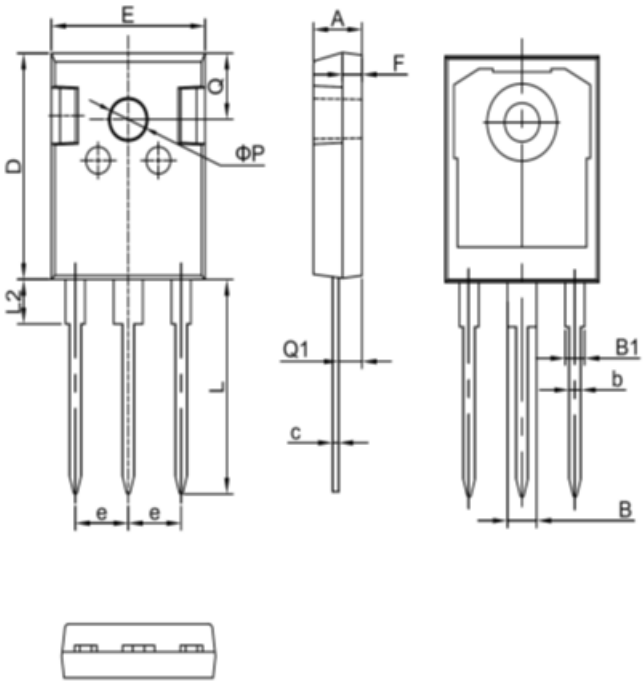


SYMBOL	mm		
	MIN	NOM	MAX
*A	4.83	5.02	5.21
A1	2.29	2.41	2.54
A2	1.91	2.00	2.16
*b	1.07	1.20	1.33
b1	2.39	2.67	2.94
b3	1.07	1.30	1.60
b5	2.39	2.53	2.69
*c	0.55	0.60	0.68
*D	23.30	23.45	23.60
D1	16.25	16.55	17.65
D2	0.95	1.19	1.25
*E	15.75	15.94	16.13
E1	13.10	14.02	14.15
E2	3.68	4.40	5.10
E3	1.00	1.45	1.90
E4	12.38	13.26	13.43
*e		2.54BSC	
e1		5.08BSC	
*L	17.31	17.57	17.82
*L1	3.97	4.19	4.37
*L2	2.30	2.50	2.65
*ΦP	3.51	3.61	3.65
*ΦP1		7.19REF	
*Q	5.49	5.79	6.00
S	6.04	6.17	6.30

外形尺寸 PACKAGE MECHANICAL DATA

TO-247

单位 Unit：mm

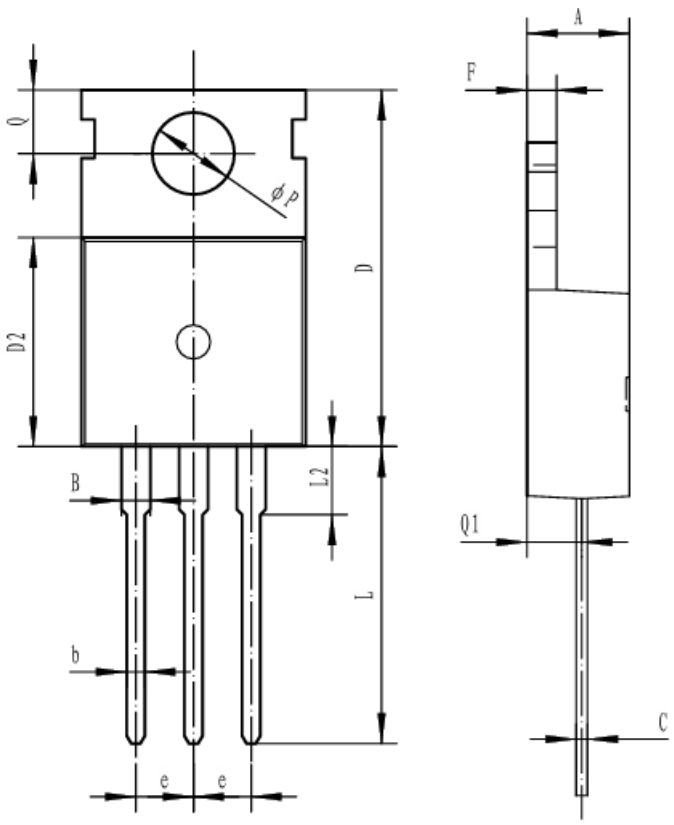


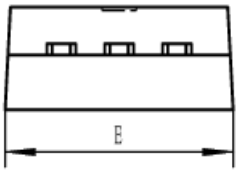
符号 symbol	MIN	MAX
A	4.90	5.10
B	2.95	3.35
B1	1.95	2.35
b	1.15	1.35
c	0.50	0.70
D	20.90	21.10
E	15.70	15.90
e	5.34	5.54
F	1.90	2.10
L	19.40	20.40
L2	4.03	4.23
Q	6.00	6.40
Q1	2.30	2.50
P	3.50	3.70

外形尺寸 PACKAGE MECHANICAL DATA

TO-220C

单位 Unit：mm



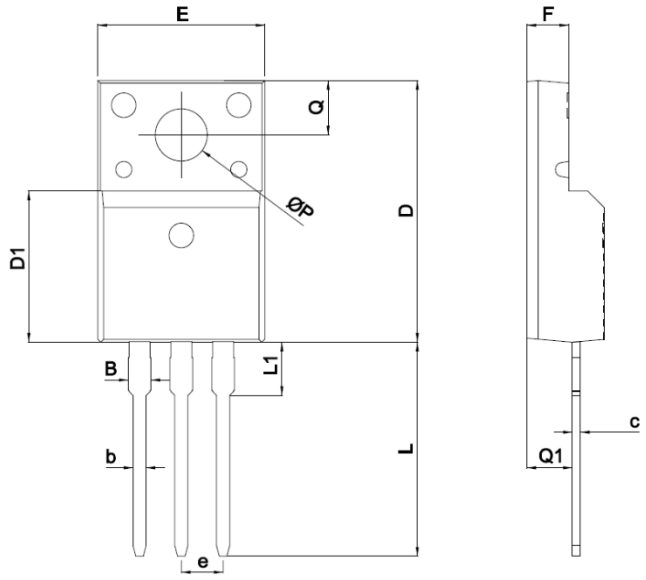


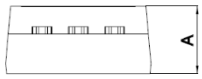
符号 symbol	MIN	MAX
A	4.30	4.70
B	1.22	1.40
b	0.70	0.95
c	0.40	0.65
D	15.20	16.20
D2	9.00	9.40
E	9.70	10.10
e	2.39	2.69
F	1.25	1.40
L	12.60	13.60
L2	2.80	3.20
Q	2.60	3.00
Q1	2.20	2.60
P	3.50	3.80

外形尺寸 PACKAGE MECHANICAL DATA

TO-220MF-K1

单位 Unit：mm



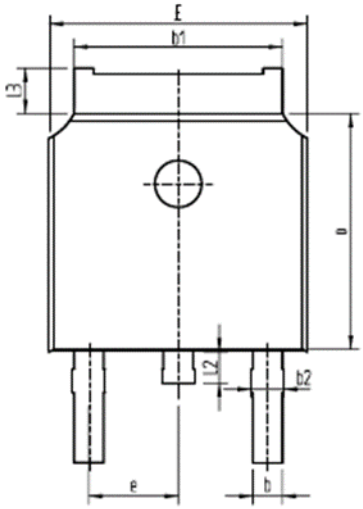


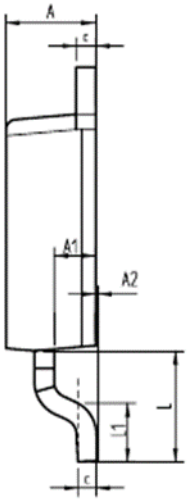
SYMBOL	mm	
	MIN	MAX
A	4.5	4.9
B	1.22	1.47
b	0.7	0.9
c	0.45	0.60
D	15.6	16.1
D1	9.0	9.3
e	2.54TYPE	
E	9.9	10.4
F	2.3	2.8
L	12.6	13.3
L1	3.1	3.4
Q	3.2	3.4
Q1	2.6	2.9
ΦP	3.0	3.5

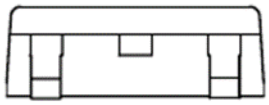
外形尺寸 PACKAGE MECHANICAL DATA

DPAK

单位 Unit：mm







SYMBOL	mm	
	MIN	MAX
A	2.16	2.41
A1	0.97	1.17
A2	0.00	0.15
b	0.63	0.93
b1	5.13	5.53
b2	0.66	0.96
c	0.40	0.60
D	5.80	6.40
E	6.30	6.90
e	2.286BSC	
L	2.50	3.30
L1	1.20	1.80
L2	0.60	1.00
L3	0.85	1.30

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