

Descriptions

This is 650V 11A N-Channel Multi-EPI Super Junction Power MOSFETF.

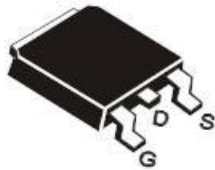
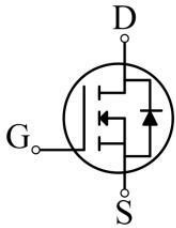
Features

- New technology for high voltage device
- Low on-resistance and low
- Conduction losses
- Ultra low gate charge cause lower driving requirements
- 100% Avalanche tested
- Rohs compliant

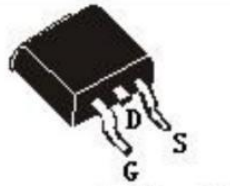
Applications

- Power factor correction (PFC)
- Switched mode power supplies(SMPS)
- Uninterruptible power supply (UPS)

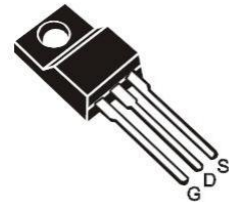
Equivalent Circuit & Pinning



TO-252(DPAK)



TO-263(D²PAK)



TO-220FP

Absolute Maximum Ratings(Ta=25°C)

PARAMETER	SYMBOL	VALUE	UNIT
Drain-source Voltage	V_{DS}	650	V
gate-source Voltage	V_{GS}	±30	V
Continuous Drain Current Tc=25°C	I_D	11	A
Continuous Drain Current Tc=100°C	I_D	6.9	A
Pulsed Drain Current ^①	I_{DM}	33*	A
Total Power Dissipation	P_{tot}	TO-252/263:83	W
		TO-220FPL:31	
Junction Temperature	T_J	150	°C
Storage Temperature	T_{STG}	-55~150	°C
Single Pulse Avalanche Energy ^②	E_{AS}	260	mJ

Electrical Characteristics(Ta=25°C)

PARAMETER	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Drain-source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	650			V
Breakdown Voltage Temperature Coefficient	$\Delta BV_{DSS}/\Delta T_J$	$I_D=250\mu A$, Referenced to 25°C		0.65		V/°C
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{GS}=V_{DS}, I_D=800\mu A$	2.5		4.5	V

Electrical Characteristics(Ta=25°C)

PARAMETER	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Drain-source Leakage Current	I _{DSS}	V _{DS} =650V, V _{GS} =0V, T _j =25°C			1	μA
		V _{DS} =520V, V _{GS} =0V, T _j = 150°C			100	μA
Forward Transconductance	g _{fs}	V _{DS} = 15V, I _D =4A ^③		4		S
Gate-body Leakage Current	I _{GSS}	V _{GS} =±30V, V _{DS} =0V			±100	nA
Static Drain-source On Resistance	R _{DS(ON)}	V _{GS} = 10V, I _D = 4A		340	380	mΩ
Input Capacitance	C _{iss}	V _{GS} = 0V, V _{DS} = 400V F = 250kHz		624		pF
Output Capacitance	C _{oss}			17		
Reverse Transfer Capacitance	C _{rss}			2		
Turn-On Delay Time	T _{d(on)}	V _{DD} =400V, I _D =4A R _G = 10Ω ^③		21		ns
Rise time	T _r			12		
Turn -Off Delay Time	T _{d(off)}			47		
Fall time	T _f			20		
Total Gate Charge	Q _g	I _D = 4A, V _{DS} = 10V V _{GS} = 400V ^③		16.5		nC
Gate-to-Source Charge	Q _{gs}			3.4		
Gate-to-Drain Charge	Q _{gd}			8.2		
Continuous Diode Forward Current	I _s				11	A
Diode Forward Voltage	V _{SD}	T _j =25°C, I _F =4A V _{GS} =0V ^③			1.4	V
Reverse Recovery Time	t _{rr}	V _{DD} = 100V, I _F =4A di/dt= 100A/μs ^③		240		ns
Reverse Recovery Charge	Q _{rr}			1.91		μC

Thermal Characteristics

PARAMETER	SYMBOL	MAX			UNIT
		TO-252	TO-263	TO-220FPL	
Thermal Resistance Junction-case	R _{thJC}	1.5	1.5	4	°C/W
Thermal Resistance Junction-ambient	R _{thJA}	110	62	62	°C/W

Note:

- ① Repetitive rating: Pulse width limited by maximum junction temperature
 ② Starting T_j=25°C, V_{DD} =50V, L=30mH, R_G =25Ω, I_{AS}=4.0A
 ③ Pulse Test : Pulse width ≤ 300μs, Duty cycle ≤ 2%

Electrical Characteristic Curve

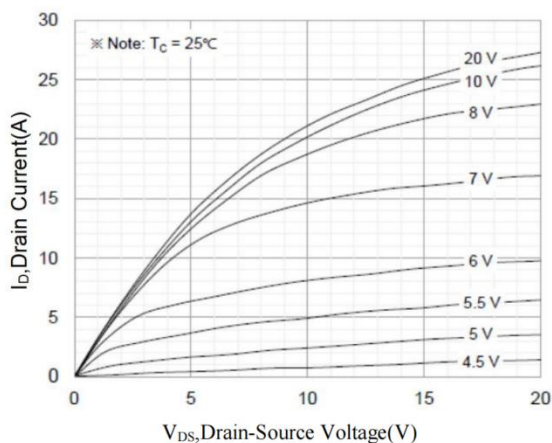


图 1 输出特性曲线

Fig.1 Output Characteristics

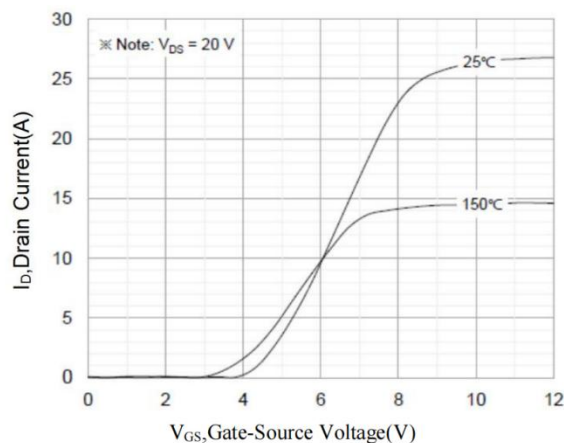


图 2 传输特性曲线

Fig.2 Transfer Characteristics

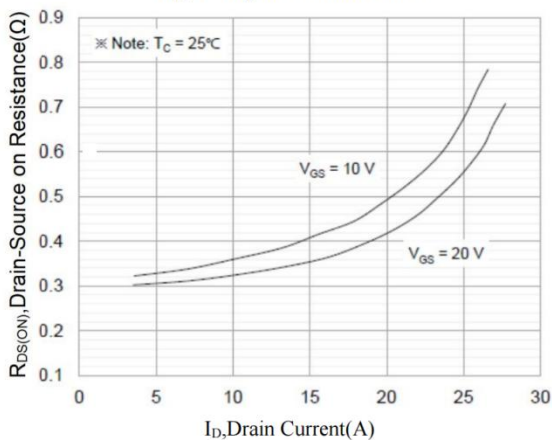


图 3 导通电阻与漏极电流和栅极电压曲线

Fig.3 On-Resistance Vs. Drain Current and Gate Voltage

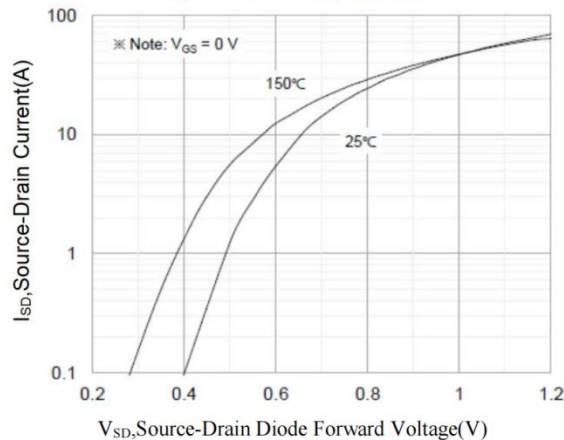


图 4 体二极管正向压降与源漏电流和温度曲线

Fig.4 Body Diode Forward Voltage Vs. Source-Drain Current and Temperature

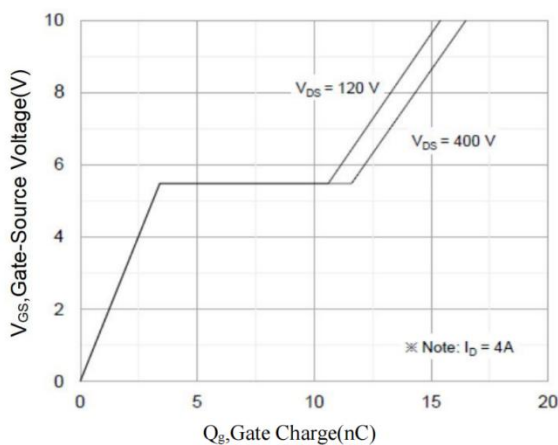


图 5 栅电荷曲线

Fig.5 Gate Charge Characteristics

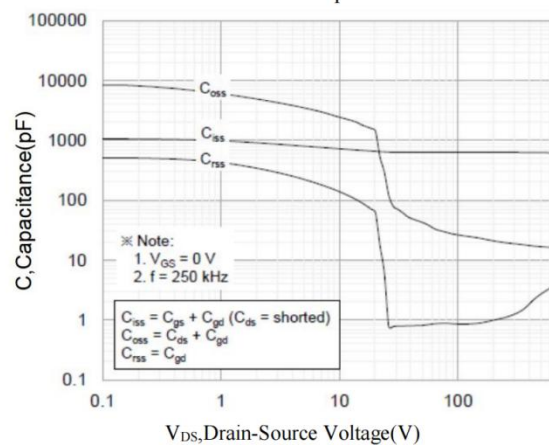


图 6 电容曲线

Fig.6 Capacitance Characteristics

Electrical Characteristic Curve

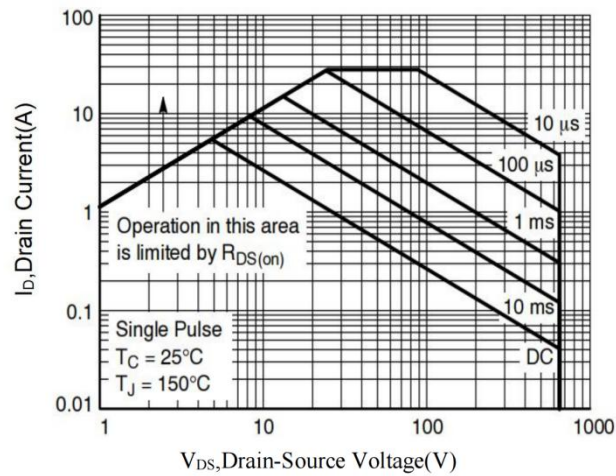


图 7 最大安全工作区域 (TO-220FPL)
Fig.7 Maximum Safe Operating Area (TO-220FPL)

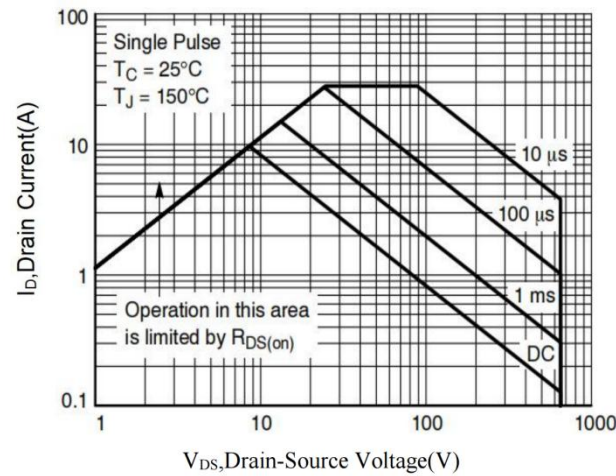


图 8 最大安全工作区域 (TO-252/263)
Fig.8 Maximum Safe Operating Area (TO-252/263)

Marking Instructions

COT
65R380

Note:

COT:

65R380:

*****:

Company Code

Product Type.

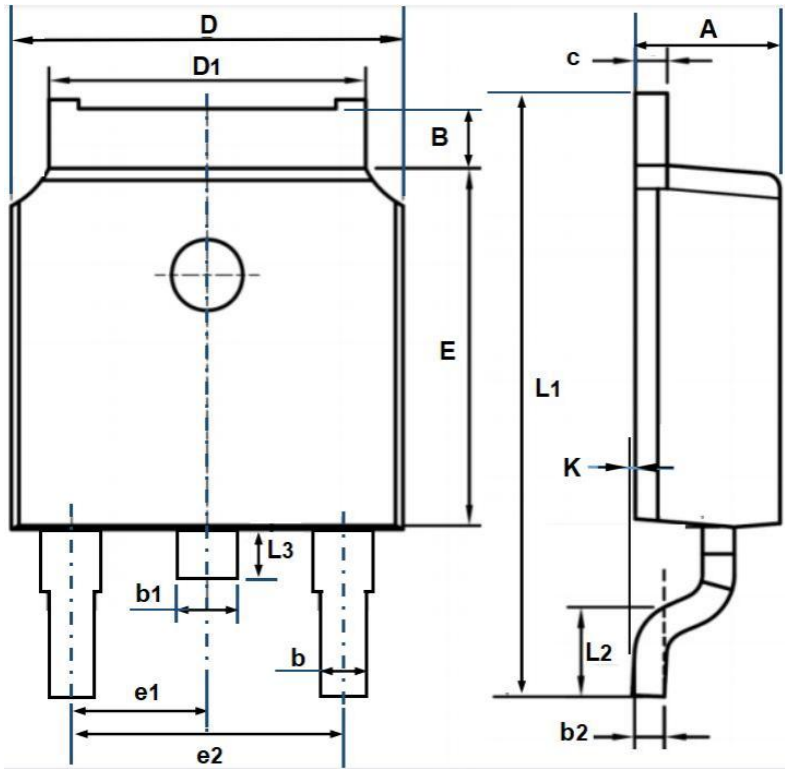
*: Inner Code * : Year Code **: Week Code **: Lot Code.

Packaging SPEC

Part	Package	Marking	Packing method
CT65R380EDP	TO-252(DPAK)	65R380	TAPE & REEL
CT65R380EBD	TO-263(D ² PAK)	65R380	TUBE TAPE & REEL
CT65R380EFP	TO-220FP	65R380	TUBE

Package Outline Dimensions

TO-252

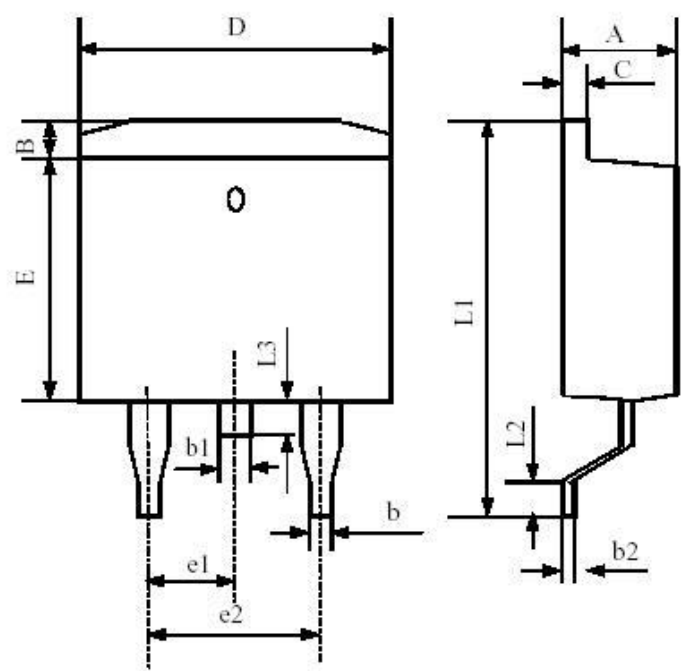


UNIT: mm

symbol	min	max	symbol	min	max
A	2.10	2.50	B	0.85	1.25
b	0.50	0.85	b1	0.90	1.15
b2	0.45	0.70	C	0.45	0.70
D	6.30	6.75	D1	5.10	5.50
E	5.30	6.30	e1	2.25	2.35
L1	9.20	10.60	e2	4.45	4.75
L2	0.90	1.75	L3	0.60	1.10
K	0.00	0.23			

Package Outline Dimensions

TO-263

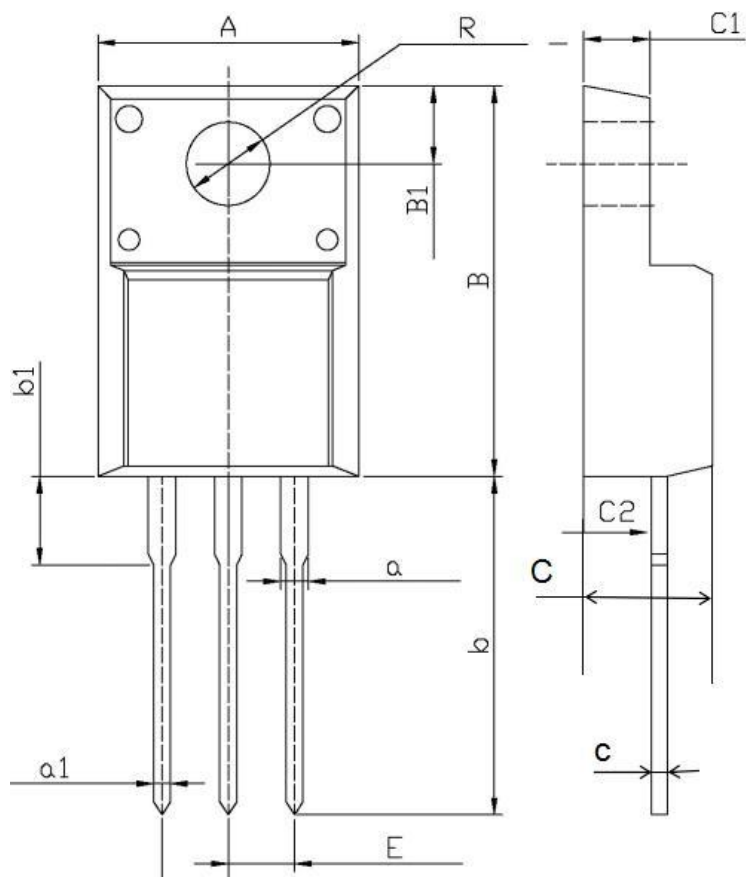


UNIT: mm

SYMBOL	min	nom	max	SYMBOL	min	nom	max
A	4.42		4.72	E	8.99		9.29
B	1.22		1.32	e1	2.44		2.64
b	0.76		0.86	e2	4.98		5.18
b1	1.22		1.32	L1	15.19		15.79
b2	0.33		0.43	L2	2.29		2.79
C	1.22		1.32	L3	1.30		1.75
D	9.95		10.25				

Package Outline Dimensions

TO-220FPL



UNIT: mm

symbol	min	nom	max	symbol	min	nom	max
A	9.90		10.36	a	1.08		1.48
B	15.40		16.40	a1	0.70		0.90
B1	3.05		3.55	E	2.34		2.75
C	4.40		5.00	C1	2.25		2.85
c	0.40		0.60	C2	2.45		3.05
b	12.40		13.50	R	2.90		3.35
b1	2.60		3.60				LJ