

Descriptions

The CT10P03ZF uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with low gate voltages. This device is suitable for use as a load switch or in PWM applications.

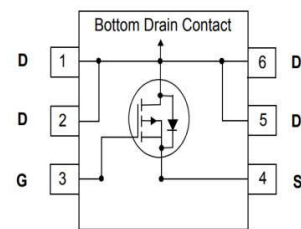
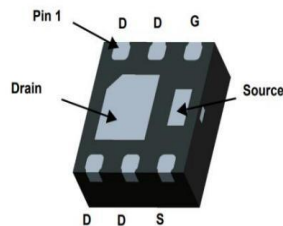
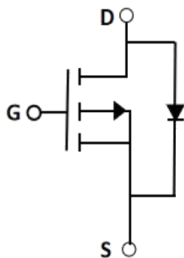
Features

- $V_{DS} = -30V, I_D = -10A$
- $R_{DS(ON)} < 21m\Omega$ @ $V_{GS} = -10V$ (TYPE:18m Ω)
- $R_{DS(ON)} < 28m\Omega$ @ $V_{GS} = -4.5V$ (TYPE:24m Ω)
- High Power and current handling capability
- Lead free product is acquired
- Surface Mount Package

Applications

- PWM applications
- Load switch
- Power management

Equivalent Circuit & Pinning



DFN2020-6L

Absolute Maximum Ratings(Ta=25°C)

Characteristics		Symbol	Rating	Unit
DrainSource Voltage		V _{DSS}	30	V
GateSource Voltage		V _{GSS}	±20	V
Continuous Drain Current(1)	Tc=25 °C (silicon limited)	I _D	-10	A
	Tc=25 °C (package limited)		-8.6	
	Tc=100 °C (silicon limited)		-6.9	
Pulsed Drain Current(2)		I _{DM}	-35	
Power Dissipation	Tc=25 °C	P _D	2.8	W
	Tc=100 °C		1.95	
Single Pulse Avalanche Energy(3)		EAS		mJ
Junction and Storage Temperature Range		T _J ,T _{stg}	55~ 175	°C

Thermal resistance ratings

Parameter	Symbol	Value	Units
Junction-to-Ambient Thermal Resistance ^a	R _{θJA}	56	°C/W
Junction-to-Ambient Thermal Resistance ^b	R _{θJA}		°C/W

Electrical Characteristics(Ta=25°C)

Symbol	Characteristics	Test Conditions	Min	Typ	Max	Unit
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	I _D = -250μA, V _{GS} =0V	-30	-33		V
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D = -250μA	-1	-1.6	-3	V
I _{DSS}	Drain CutOff Current	V _{DS} = -30V, V _{GS} =0V			1	μA
I _{GSS}	Gate Leakage Current	V _{GS} = ±20V, V _{DS} =0V			±0.1	μA
R _{DS(on)}	Drain-Source On-Resistance	V _{GS} = -10V, I _D = -8A		18	21	mΩ
		V _{GS} = -4.5V, I _D = -4A		24	30	mΩ
		V _{GS} = -2.5V, I _D = -2A		-		mΩ
g _{FS}	Forward Transconductance	V _{DS} = -10V, I _D = -8A		-		S
Dynamic Characteristics						
Q _g	Total Gate Charge	V _{DS} = -15V, I _D = -10A, V _{GS} = -10V		20		nc
Q _{gs}	Gate Source Charge			3.2		nc
Q _{gd}	Gate Drain Charge			4.1		nc
C _{iss}	Input Capacitance	V _{DS} = -15V, V _{GS} = 0V, f=1.0MHz		875		pF
C _{rss}	Reverse Transfer Capacitance			106		pF
C _{oss}	Output Capacitance			176		pF
t _{D(on)}	Turn-On Delay Time	V _{GS} = -10V, V _{DS} = -15V, R _L = 2.8Ω, R _G = 6Ω		8.5		ns
t _r	Rise Time			9.6		ns
t _{D(off)}	Turn-Off Delay Time			42		ns
t _f	Fall Time			19.2		ns
R _g	Gate Resistance	f=1MHz				Ω
Drain-Source Body Diode Characteristics						
V _{SD}	SourceDrain Diode Forward Voltage	I _S = -10A, V _{GS} =0V		-0.9	-1.2	V
t _{rr}	Body Diode Reverse Recovery Time	I _F = -10A, dI/dt=100A/μS		-		ns
Q _{rr}	Body Diode Reverse Recovery Charge			-		nc

Notes:

1.Repetitive Rating: Pulse width limited by maximum junction temperature.

Electrical Characteristic Curve

Fig1. Power Dissipation

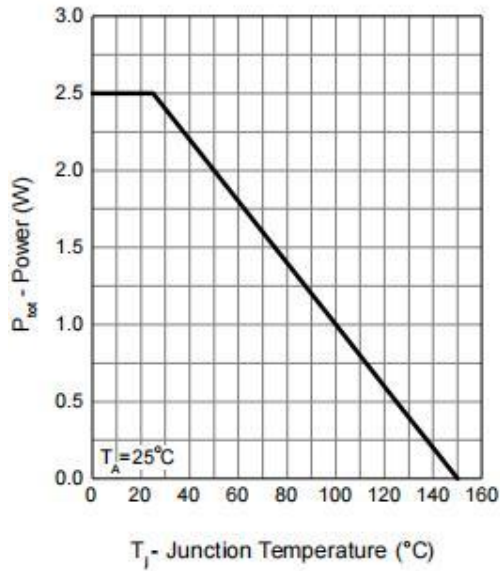


Fig2. Drain Current

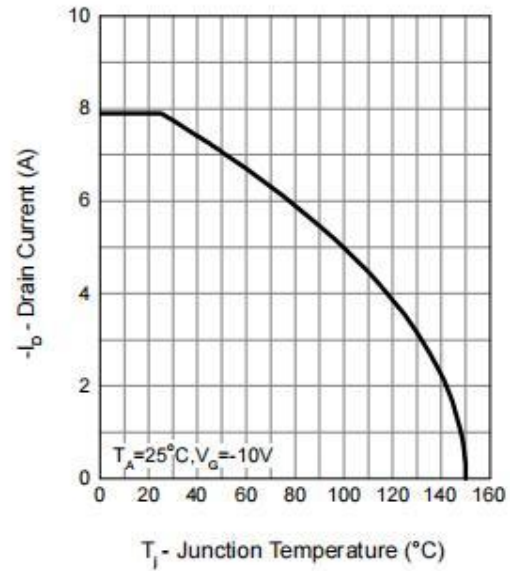


Fig3. Output Characteristics

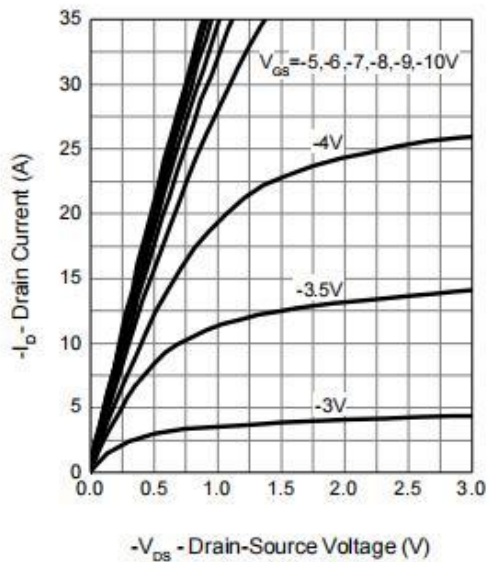
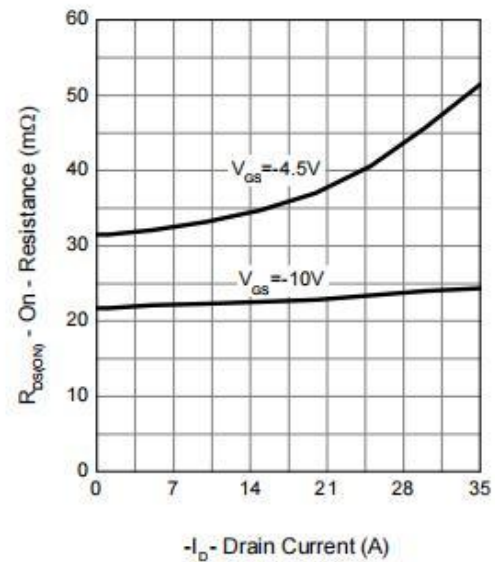


Fig4. Drain-Source On Resistance



Electrical Characteristic Curve

Fig5. Gate-Source On Resistance

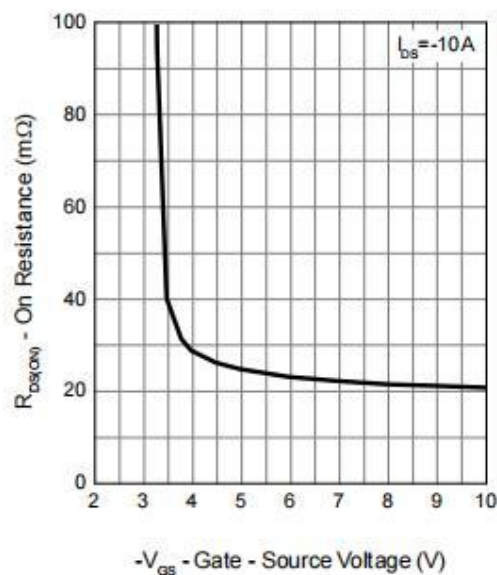


Fig6. Gate Threshold Voltage

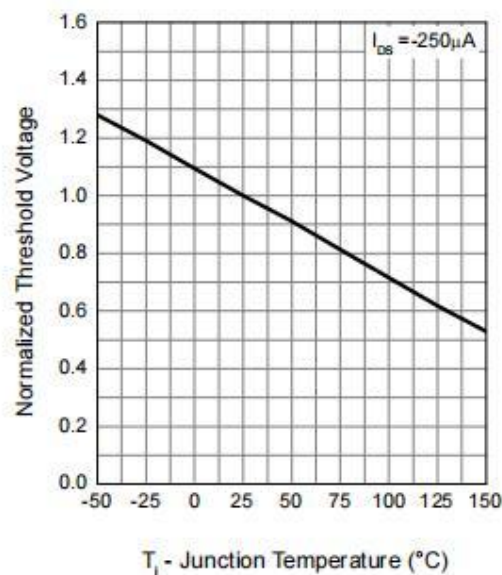


Fig7. Drain-Source On Resistance

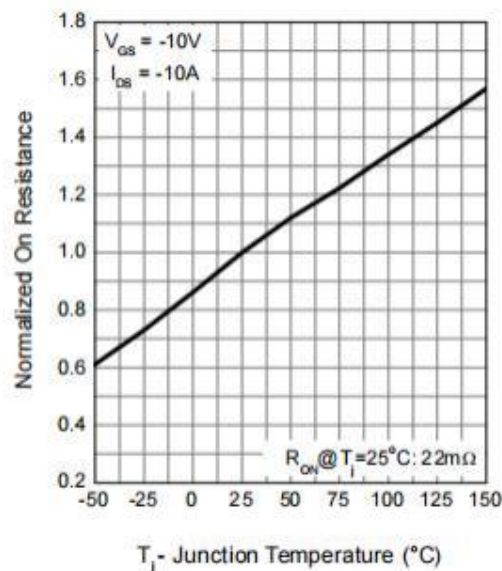
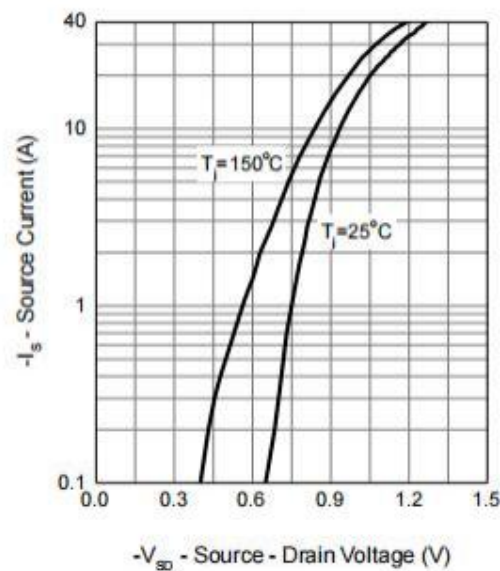


Fig8. Source-Drain Diode Forward



Electrical Characteristic Curve

Fig9. Capacitance

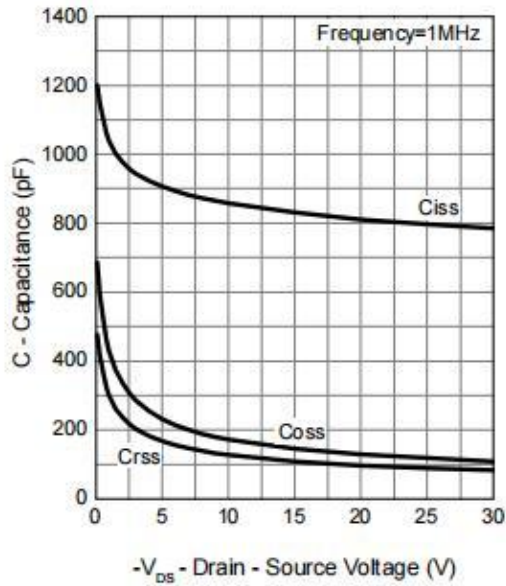


Fig10. Gate Charge

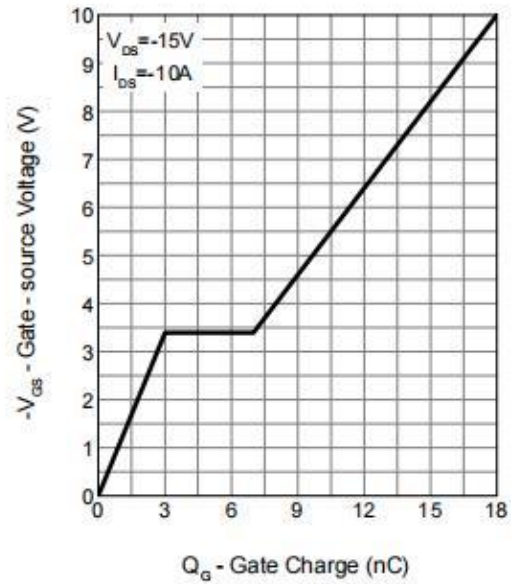


Fig11. Safe Operation Area

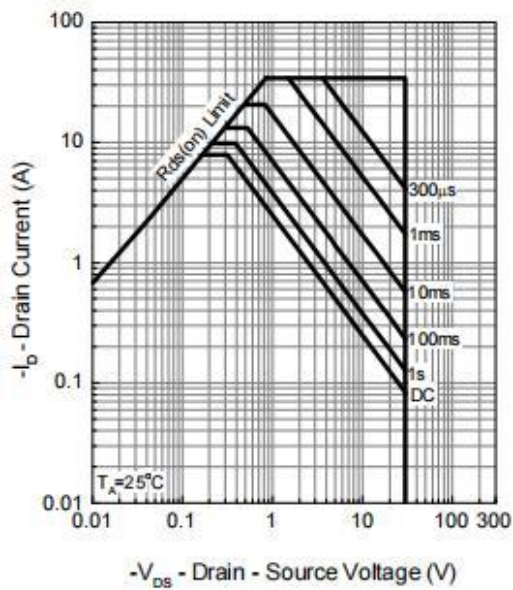
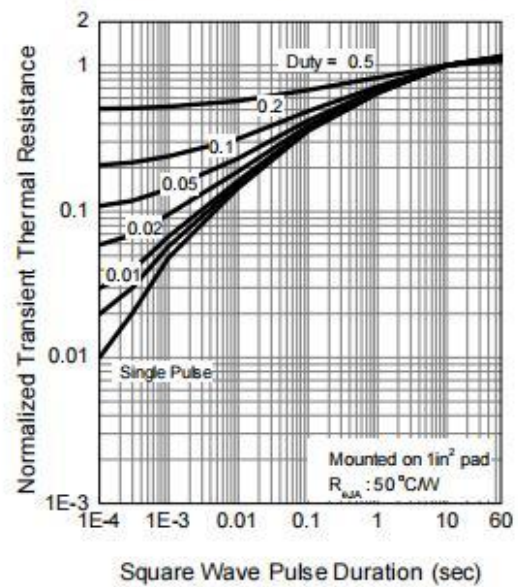


Fig12. Thermal Transient Impedance



Marking Instructions



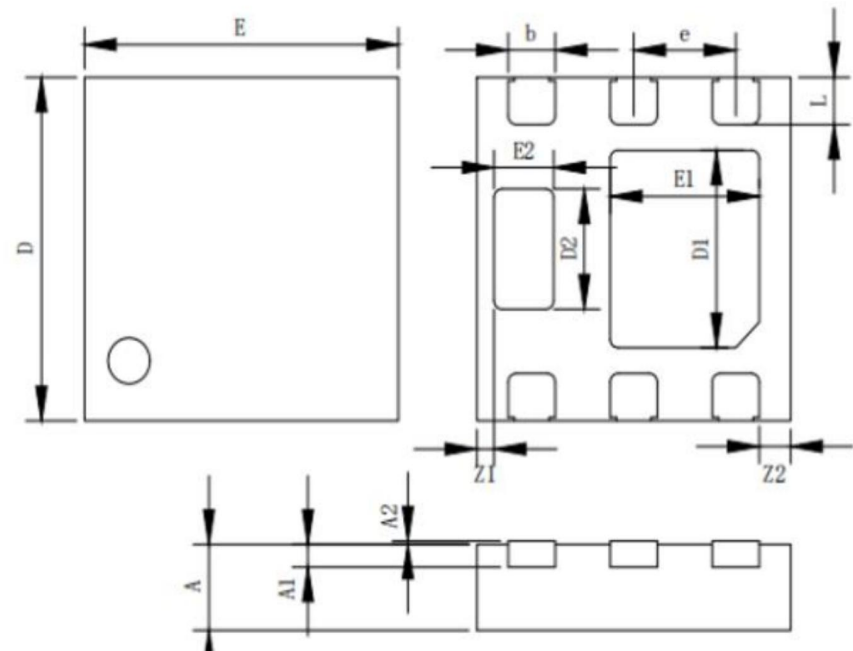
Note:
COT: Company Code.
10P03: Product Type
****: Lot No. Code, code change with Lot No.

Packaging SPEC

Device	Package	Reel size	Tape width	Quantity
CT10P03ZF	DFN2020-6L	7inch	8mm	5000

Package Outline Dimensions

DFN2020-6L



Symbol	Millimeters		
	MIN	NOM	MAX
D	1.95	2.00	2.05
E	1.95	2.00	2.05
D1	1.10	1.15	1.20
E1	0.90	0.95	1.00
D2	0.65	0.70	0.75
E2	0.33	0.38	0.43
L	0.23	0.275	0.33
b	0.25	0.30	0.35
e	0.65BSC		
A	0.45	0.50	0.55
A1	0.150REF		
A2	0.00	-	0.05
Z1	0.06	0.11	0.16
Z2	0.15	0.20	0.25