Description

This is CT56N02ZT Dual N-Channel Enhancement Mode MOSFET uses advanced power trench technology that has been especially tailored to minimize the on-state resistance This device is suitable for un-directional or bidirectional load switch, facilitated by its common-drain configuration.

Applications

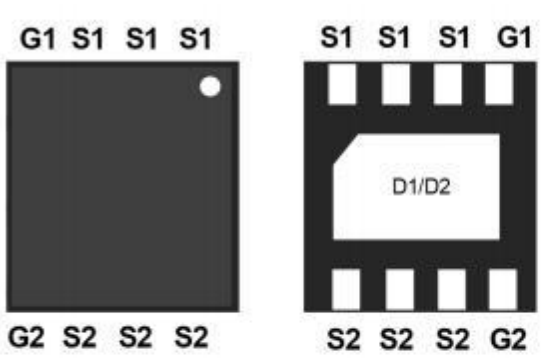
- Battery protection
- Load switch

V_{DSS}	$R_{DS(on)}$ (VGS=4.5V)	I_D
20V	4.2mΩ	56A

Features

- Super high dense cell for low RDS(ON)
- RoHS Compliant and Halogen-Free
- ESD protected: Class 2

Schematic & PIN Configuration



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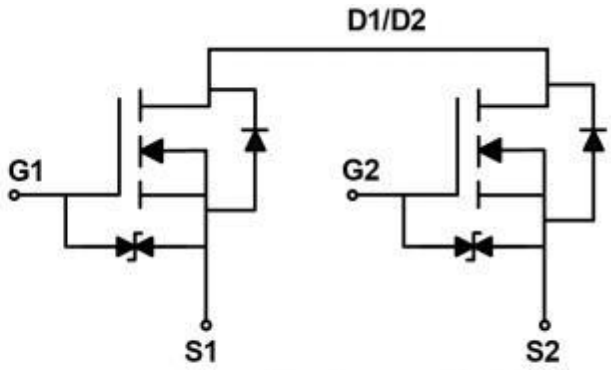


Device symbol

Absolute Maximum Ratings

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	20	V
Gate-Source Voltage		V_{GS}	±12	V
Continuous Drain Current	T_A=25℃	I_D	56	A
	T_A=70℃		20	A
Pulsed Drain Current[1]		I_{DM}	210	A
Single Pulse Avalanche Energy[5]		**EAS**	64.8	mJ
Avalanche Current		I_{AS}	36	A
Total Power Dissipation	T_A=25℃	P_D	3.6	W
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55 to 150	°C
Maximum Junction-to-Ambient[2]		$R_{\theta JA}$	35	°C/W

Electrical Characteristics (Tamb=25° C unless otherwise noted)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = 250μA	20	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 20V, V_{GS} = 0V			1	μA
Gate-body Leakage Current	I_{GSS}	V_{DS} = 0V, V_{GS} = ±8V	-	-	±10	μA
Gate-Threshold Voltage[3]	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	0.45	-	1.0	V
Drain-Source on-Resistance[3]	$R_{DS(on)}$	V_{GS} = 4.5V, I_D = 3A	3.5	4.2	5.8	mΩ
		V_{GS} = 3.9V, I_D = 3A	3.7	4.3	6.5	
		V_{GS} = 3.1V, I_D = 3A	3.8	4.7	6.8	
		V_{GS} = 2.5V, I_D = 3A	4	5	7	
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS} = 10V, V_{GS} =0V, f =1MHz	-	3165	-	pF
Output Capacitance	C_{oss}		-	380	-	
Reverse Transfer Capacitance	C_{rss}		-	325	-	
Switching Characteristics						
Total Gate Charge[4]	Q_g	V_{GS} =4.5V, V_{DS} = 10V, I_D= 3A	-	38	-	nC
Total Gate Charge[4]	Q_g	V_{GS} =3.9V, V_{DS} = 10V, I_D= 3A	-	33	-	
Gate-Source Charge[4]	Q_{gs}		-	4.5	-	
Gate-Drain Charge[4]	Q_{gd}		-	12	-	
Turn-on Delay Time[4]	$t_{d(on)}$	V_{GS} =4.5V, V_{DD} = 16V, R_G = 6Ω, I_D= 3A	-	22	-	nS
Rise Time[4]	t_r		-	41	-	
Turn-off Delay Time[4]	$t_{d(off)}$		-	77	-	
Fall Time[4]	t_f		-	21	-	
Drain-Source Diode Characteristics						
Diode Forward Voltage	V_{SD}	I_S = 1A, V_{GS} = 0V	-	-	1.2	V

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface mounted on FR4 board using 1 square inch pad size,1oz single-side copper.
3. Pulse Test: Pulse width≤300μs, duty cycle≤2%.
4. Guaranteed by design, not subject to product
5. The EAS data shows Max. rating . The test condition is V_{DD}=25V, V_{GS}=10V, L=0.1mH, I_{AS}=36A.

Typical Characteristics

Figure 1. Output Characteristics

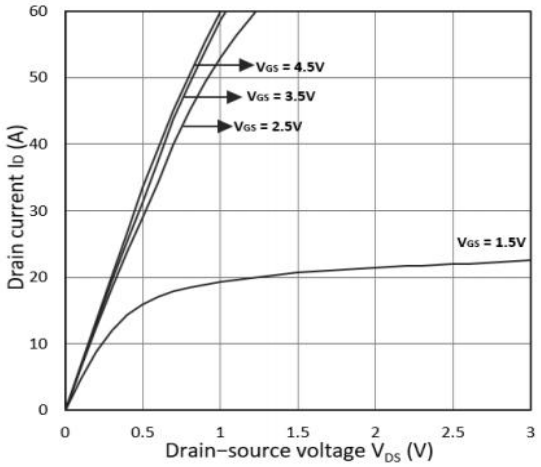


Figure 2. Transfer Characteristics

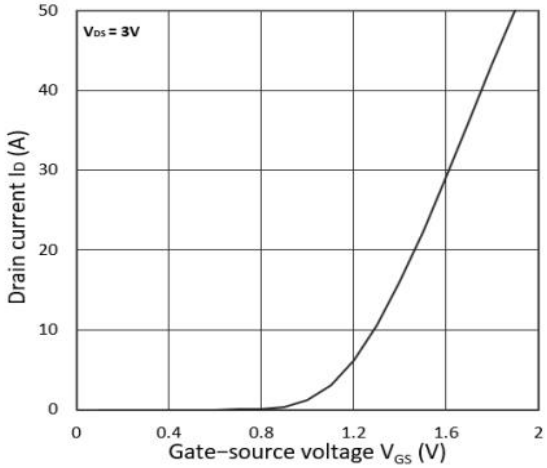


Figure 3. $R_{DS(ON)}$ vs. I_D

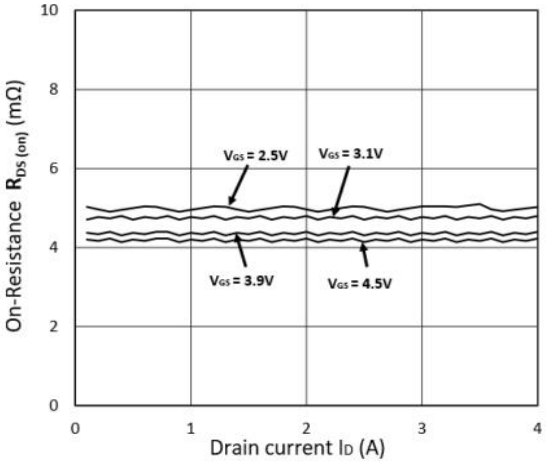


Figure 4. $R_{DS(ON)}$ vs. V_{GS}

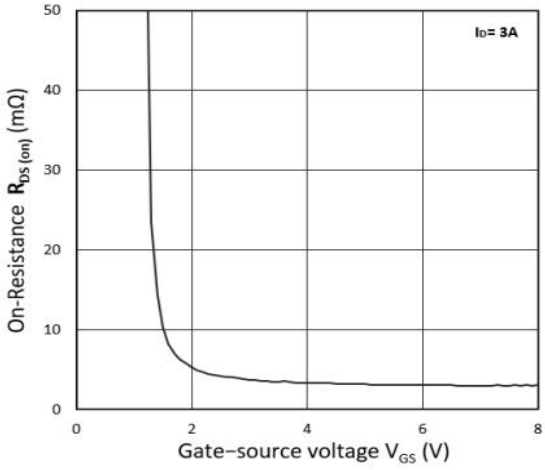


Figure 5. I_S vs. V_{SD}

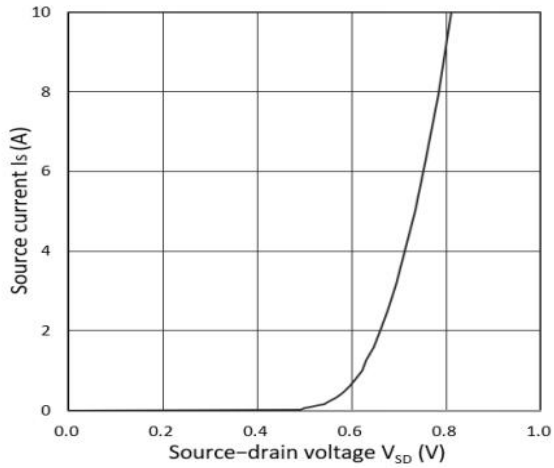
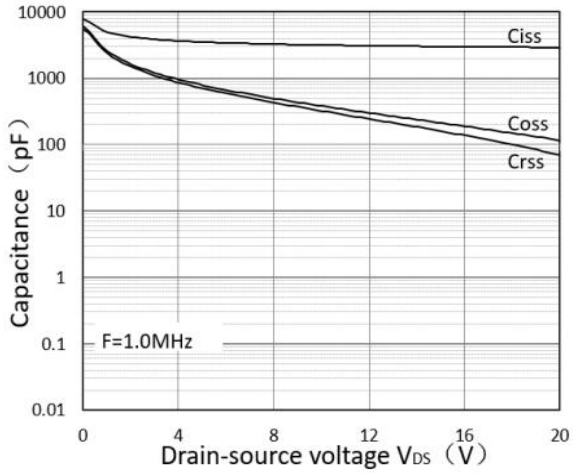


Figure 6. Capacitance Characteristics



Marking Codes

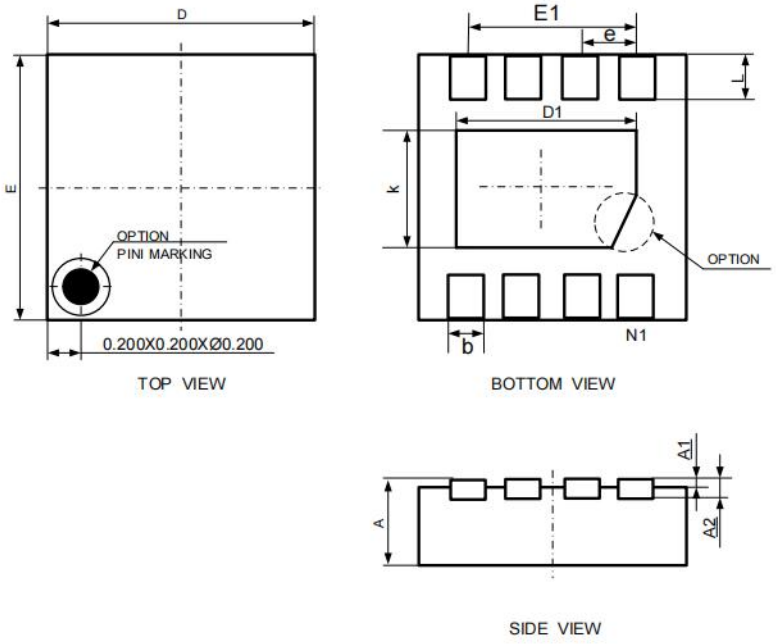
Part Number	CT56N02ZT
Marking Code	 Q56N02 = Device code XXXX XXX= Date code

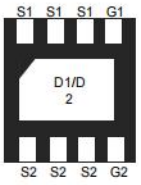
Package Information

Qty： 3k/Reel

Mechanical Dimensions for PDFN3030-8L

PACKAGE OUTLINE





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DIMENSIONS

SYMBOL	MILLIMETER		INCHES	
	MIN	MAX	MIN	MAX
A	0.70	0.80	0.027	0.031
A1	0.00	0.05	0.000	0.002
A2	0.203		0.008	
D	2.90	3.10	0.114	0.122
E	2.90	3.10	0.114	0.122
E1	1.95REF		0.077BSC	
D1	2.20	2.40	0.087	0.094
K	1.40	1.60	0.055	0.063
b	0.25	0.35	0.009	0.014
e	0.65 BSC.		0.026BSC	
L	0.35	0.45	0.014	0.018