

Description

This is CT095N02DYG 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.

$V_{(BR)DSS}(V)$	$I_D(A)$	$R_{DS(on)} TYP (m\Omega)$
20	9.5	7.4 @VGS=4.5V
		7.8 @VGS=4.0V
		8.0 @VGS=3.7V
		8.8 @VGS=3.1V
		10.4 @VGS=2.5V

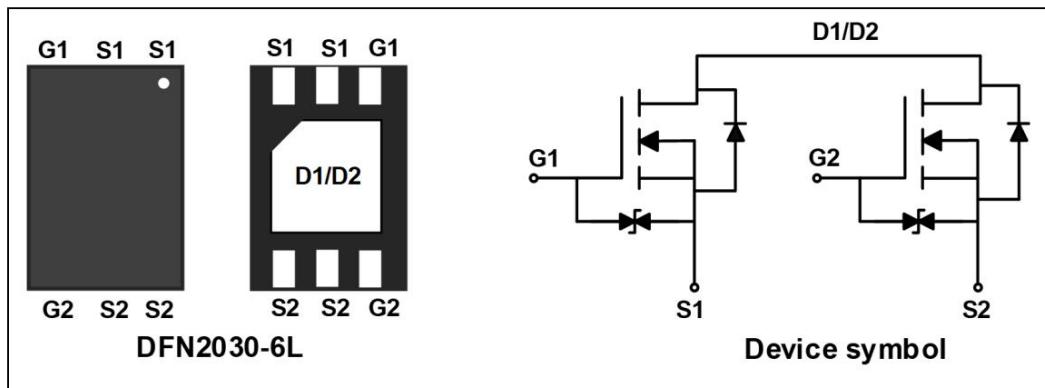
Applications

- Battery protection
- Load switch

Features

- Super high dense cell for low $R_{DS(on)}$
- RoHS Compliant and Halogen-Free
- ESD protected: Class 2

Schematic & PIN Configuration



Absolute Maximum Rating

Parameter		Symbol	Value	Unit
Drain-Source voltage		V_{DS}	20	V
Gate-Source voltage		V_{GS}	± 12	V
Continuous Drain Current	$T_A=25^\circ C$	I_D	9.5	A
	$T_A=70^\circ C$		7.6	
Pulsed Drain Current ¹		I_{DM}	60	A
Single Pulse Avalanche Energy ⁵		E_{AS}	31	mJ
Avalanche Current		I_{AS}	25	A
Total Power Dissipation	$T_A=25^\circ C$	P_D	1.56	W
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55 to +150	$^\circ C$
Maximum Junction-to-Ambient ²		$R_{\theta JA}$	80	$^\circ C/W$

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
Gate-body Leakage Current	I _{GSS}	V _{DS} = 0V, V _{GS} = ±8V	-	-	±10	μA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 20V, V _{GS} = 0V	-	-	1	μA
Gate-Threshold Voltage ³	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250μA	0.45	-	1.5	V
Drain-Source on-Resistance ³	R _{DS(on)}	V _{GS} = 4.5V, I _D = 5A	5.4	7.4	9.4	mΩ
		V _{GS} = 4.0V, I _D = 5A	5.8	7.8	9.8	
		V _{GS} = 3.7V, I _D = 5A	6	8	10	
		V _{GS} = 3.1V, I _D = 5A	6.4	8.8	11.2	
		V _{GS} = 2.5 V, I _D = 5A	8	10.4	12.8	
Forward Transconductance ³	g _{fs}	V _{DS} = 5V, I _D = 5A	-	42	-	S
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} = 10V, V _{GS} = 0V, f = 1MHz	-	1647	-	pF
Output Capacitance	C _{oss}		-	170	-	
Reverse Transfer Capacitance	C _{rss}		-	148	-	
Switching Characteristics						
Total Gate Charge ⁴	Q _g	V _{GS} = 4.5V, V _{DS} = 15V, I _D = 5.5A	-	22	-	nC
Gate-Source Charge ⁴	Q _{gs}		-	3.1	-	
Gate-Drain Charge ⁴	Q _{gd}		-	8.2	-	
Turn-on Delay Time ⁴	t _{d(on)}	V _{GS} = 4.5V, V _{DD} = 15V, R _G = 6Ω, I _D = 5.5A	-	10	-	nS
Rise Time ⁴	t _r		-	39.5	-	
Turn-off Delay Time ⁴	t _{d(off)}		-	65	-	
Fall Time ⁴	t _f		-	30	-	
Drain-Source Body Diode Characteristics						
Diode Forward Voltage	V _{SD}	I _S = 9.5A, 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 $\leq 300\mu s$, duty cycle $\leq 2\%$.
4. Guaranteed by design, not subject to product
5. The EAS data shows Max. rating . The test condition is $V_{DD}=25V, V_{GS}=10V, L=0.1mH, I_{AS}=25A$.

Typical Characteristics

Figure 1. Output Characteristics

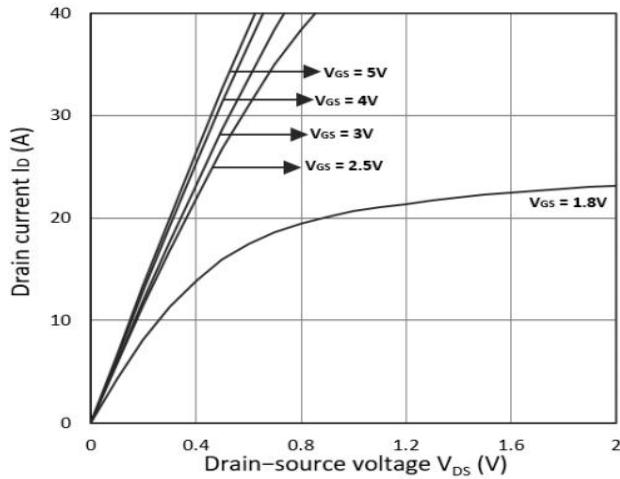


Figure 2. Transfer Characteristics

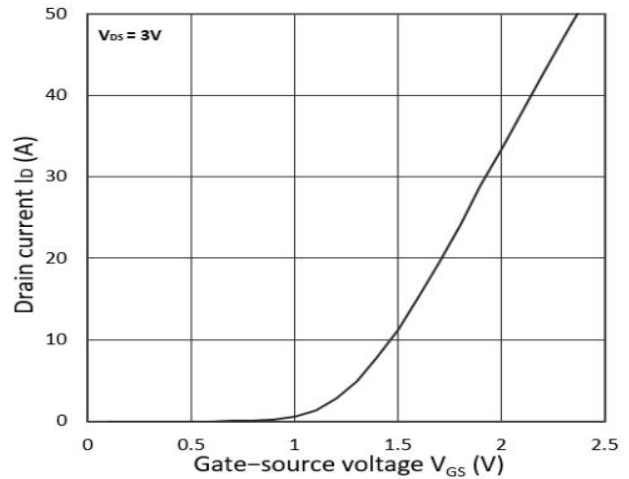


Figure 3. $R_{DS(on)}$ vs. I_D

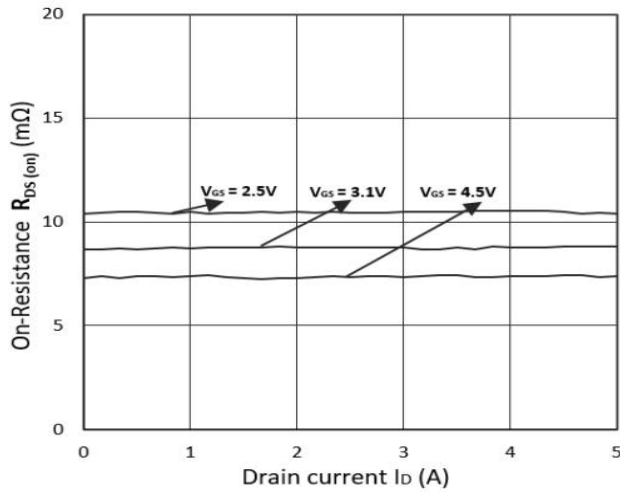


Figure 4. $R_{DS(on)}$ vs. V_{GS}

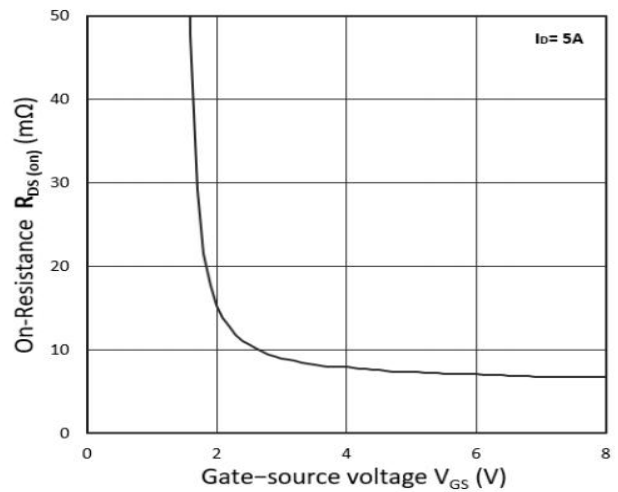


Figure 5. I_S vs. V_{SD}

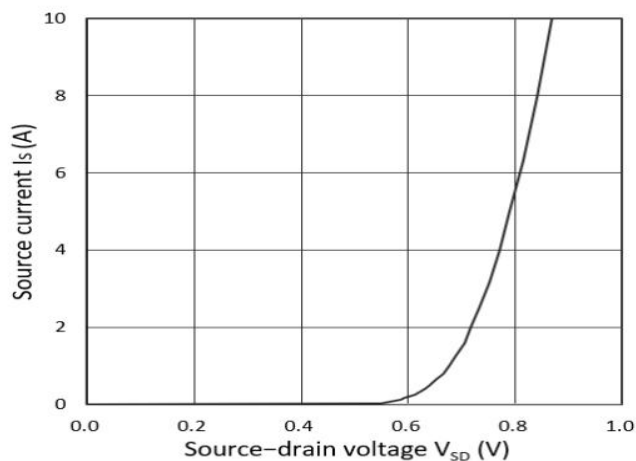
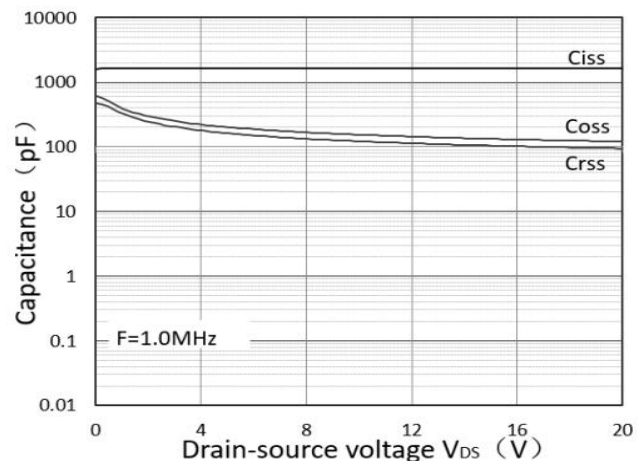
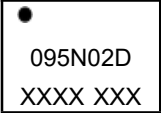


Figure 6. Capacitance Characteristics



Marking Codes

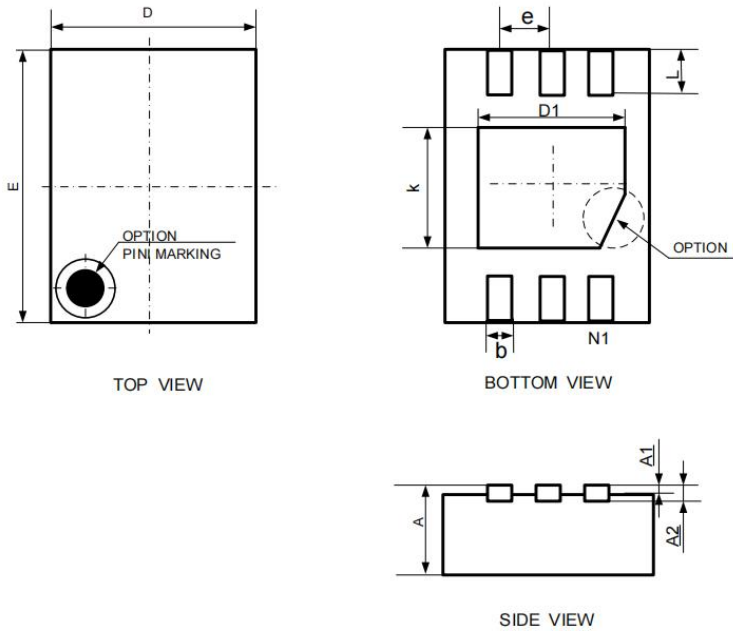
Part Number	CT095N02DYG
Marking Code	 095N02D = Device Code XXXX XXX= Date Code

Package Information

Qty: 3k/Reel

Outline Drawing -DFN2030-6L

PACKAGE OUTLINE



DFN2030-6L

DIMENSIONS

SYMBOL	MILLIMETER		INCHES	
	MIN	MAX	MIN	MAX
A	0.70	0.80	0.028	0.031
A1	0.00	0.05	0.000	0.002
A2	0.203		0.008	
D	1.95	2.05	0.077	0.081
E	2.95	3.05	0.116	0.120
k	1.65	1.75	0.057	0.061
D1	1.45	1.55	0.065	0.069
b	0.20	0.30	0.008	0.012
e	0.50 BSC		0.020BSC	
L	0.30	0.40	0.012	0.016