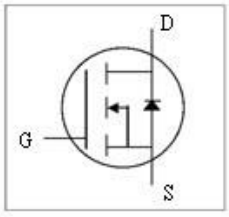
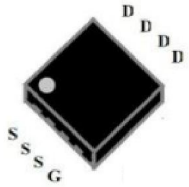
»Features

- **Simple Drive Requirement**
- **Small Size & Low RDS(ON)**
- **RoHS Compliant & Halogen-Free**

BV_{DSS}	30 V
$R_{DS(ON)typ}$	4.45 mΩ



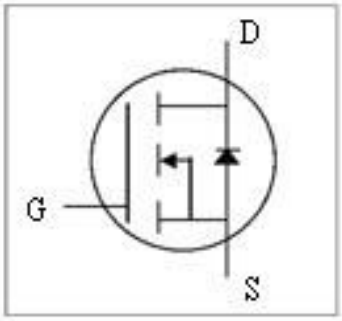


PDFN3*3

»Description

CT03NR005Q is from Coretong innovated design and silicon process technology to achieve the lowest possible on-resistance and fast switching performance. It provides the designer with an extreme efficient device for use in a wide range of The package is special for voltage conversion application using standard infrared reflow technique with the backside heat sink to achieve the good thermal.

»Schematic & PIN Configuration



PDFN3x3

»Absolute Maximum Ratings@T_j=25°C(unless otherwise specified)

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	30	V
V_{GS}	Gate-Source Voltage	±20	V
I_D@T_C=25℃	Drain Current, V_{GS} @ 10V[4]	40	A
I_D@T_A=25℃	Drain Current, V_{GS} @ 10V[3]	20	A
I_D@T_A=70℃	Drain Current, V_{GS} @ 10V[3]	15.6	A
I_{DM}	Pulsed Drain Current[1]	120	A
P_D@T_A=25℃	Total Power Dissipation[3]	3	W
T_{STG}	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	-55 to 150	℃

»Thermal Data

Symbol	Parameter	Value	Unit
Rthj-c	Maximum Thermal Resistance, Junction-case	4	℃/W
Rthj-a	Maximum Thermal Resistance, Junction-ambient[3]	40	℃/W

»Electrical Characteristics@T_j=25 °C(unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=1mA	30	-	-	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance[2]	V_{GS}=10V, I_D=19A	-	4.45	4.8	mΩ
		V_{GS}=4.5V, I_D=12A	-	6.15	7.5	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250uA	1	1.3	2.3	V
g_{fs}	Forward Transconductance	V_{DS}=10V, I_D=19A	-	69	-	S
I_{DSS}	Drain-Source Leakage Current	V_{DS}=24V, V_{GS}=0V	-	-	10	uA
I_{GSS}	Gate-Source Leakage	V_{GS}=±20V, V_{DS}=0V	-	-	±100	nA
Q_g	Total Gate Charge[2]	I_D=16A V_{DS}=15V V_{GS}=4.5V	-	11	-	nC
Q_{gs}	Gate-Source Charge		-	2	-	nC
Q_{gd}	Gate-Drain ("Miller") Charge		-	7	-	nC
$t_{d(on)}$	Turn-on Delay Time	V_{DS}=15V I_D=19A R_G=3.3Ω V_{GS}=10V	-	11	-	ns
t_r	Rise Time		-	59	-	ns
$t_{d(off)}$	Turn-off Delay Time		-	29	-	ns
t_f	Fall Time		-	13	-	ns
C_{iss}	Input Capacitance	V_{GS}=0V V_{DS}=15V f=1.0MHz	-	1100	-	pF
C_{oss}	Output Capacitance		-	350	-	pF
Crss	Reverse Transfer Capacitance		-	140	-	pF
Rg	Gate Resistance	f=1.0MHz	-	1.1	-	Ω

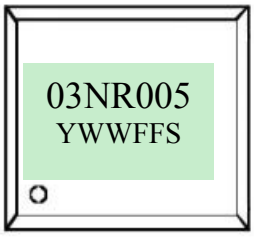
»Source-Drain Diode

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
V_{SD}	Forward On Voltage[2]	I_S=19A, V_{GS}=0V	-	-	1.2	V
t_{rr}	Reverse Recovery Time	I_S=20A, V_{GS}=0V dI/dt=100A/μs	-	15	-	ns
Q_{rr}	Reverse Recovery Charge		-	6	-	nC

Notes:

1. Pulse width limited by Max. junction temperature.
2. Pulse test
3. Surface mounted on 1 in^2 2oz copper pad of FR4 board, t <10sec ; 135oC/W when mounted on min. copper pad.
4. Maximum current limited by package

»Marking Information



Package	PDFN3x3	
XXXX	Part Number	
PP	Package Code	
Y	Year	F=2020 , G=2021, ……
WW	Weeks	Ex. 10/27=44weeks, 11/3=45weeks
FF	Wafer lot	Lot No.
S	Serial	Serial No.
Dot	First pin	

»Typical Characteristics

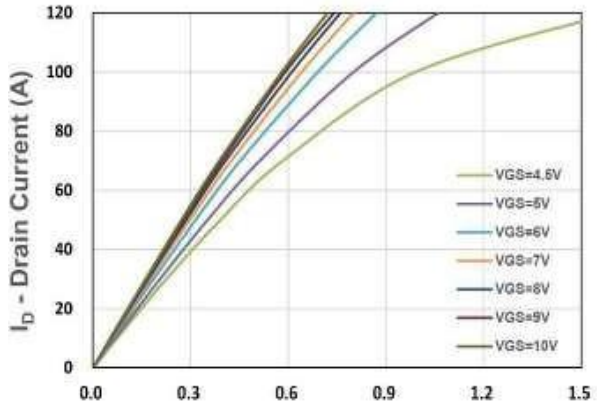


Figure 1. Output Characteristics

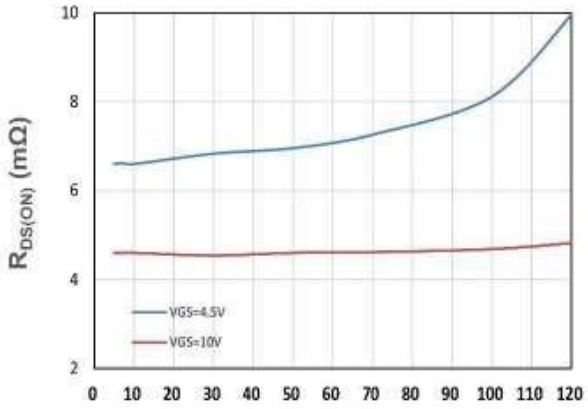


Figure 2. On-Resistance vs. ID

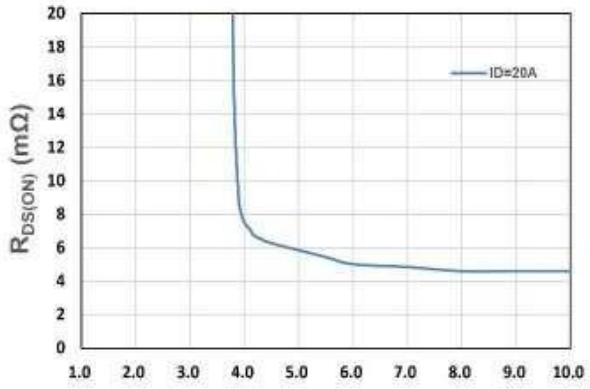


Figure 3. On-Resistance vs. VGS

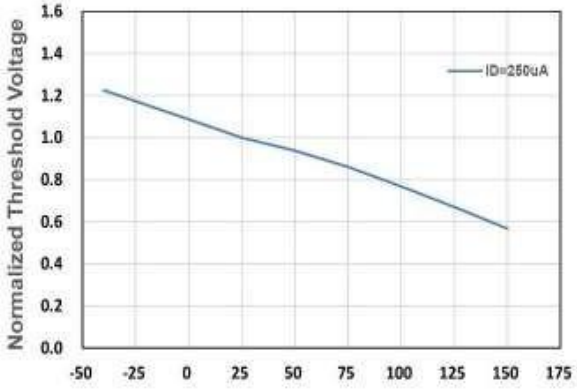


Figure 4. Gate Threshold Voltage

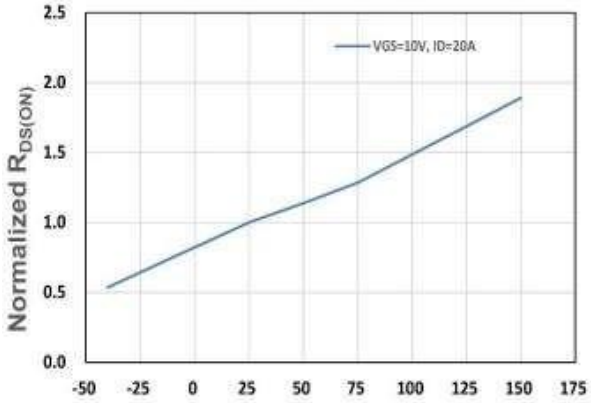


Figure 5. Drain-Source On Resistance

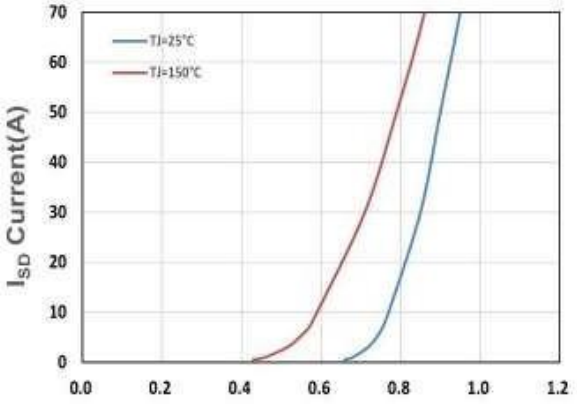


Figure 6. Source-Drain Diode Forward

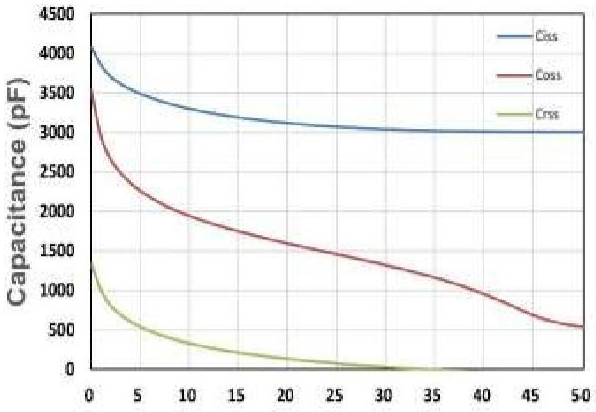


Figure 7. Capacitance

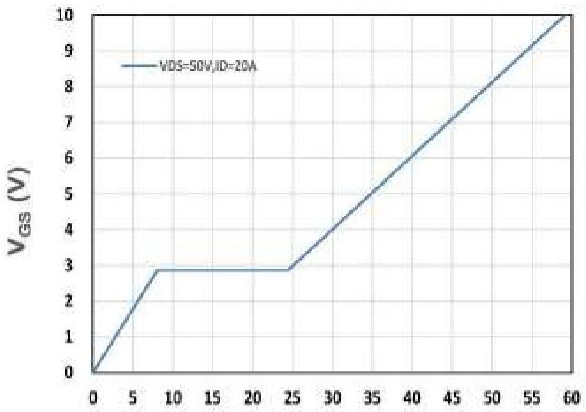


Figure 8. Gate Charge Characteristics

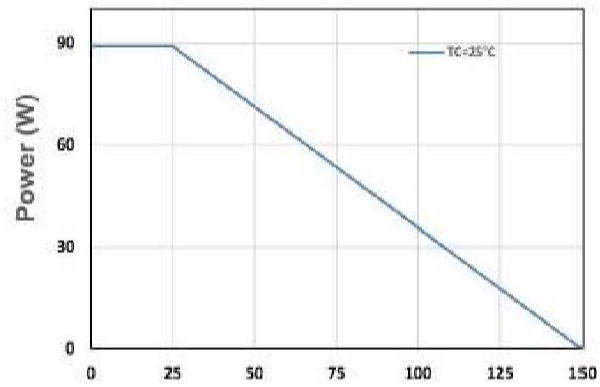


Figure 9. Power Dissipation

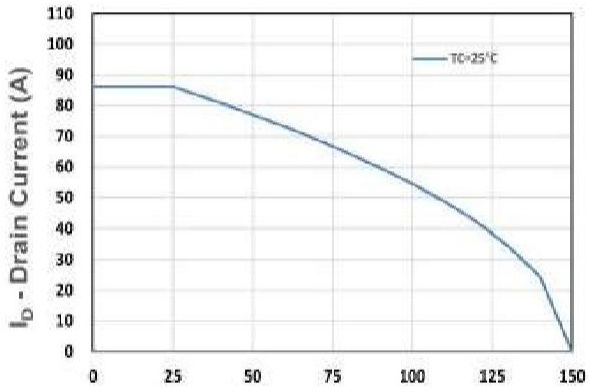


Figure 10. Drain Current

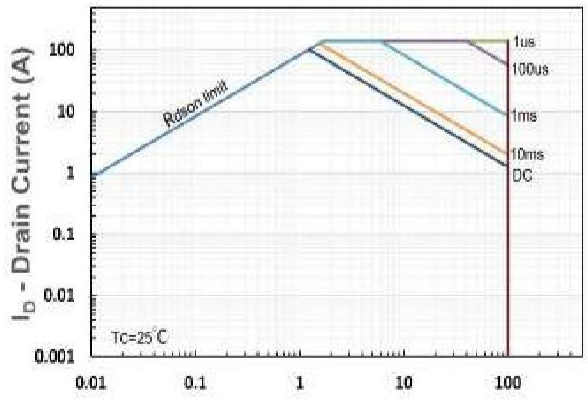


Figure 11. Safe Operating Area

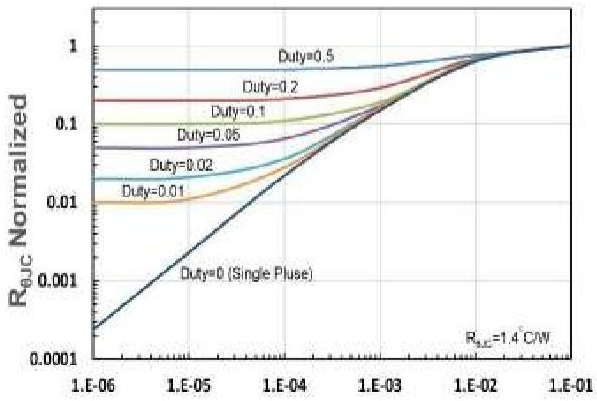
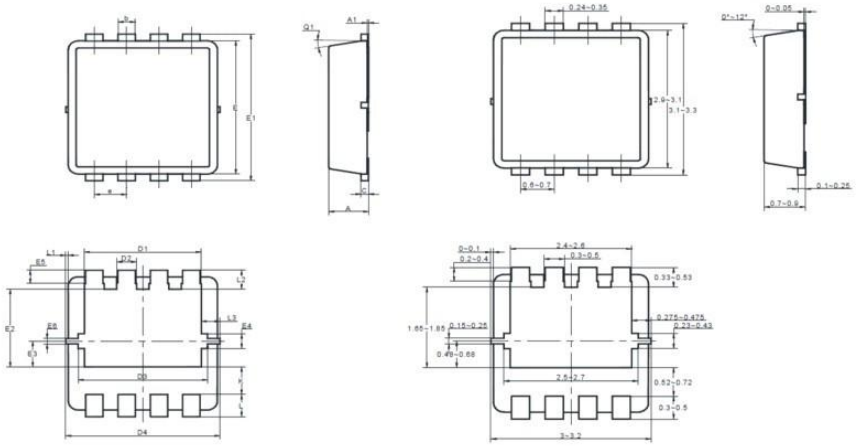


Figure 12. RθJC Transient Thermal Impedance

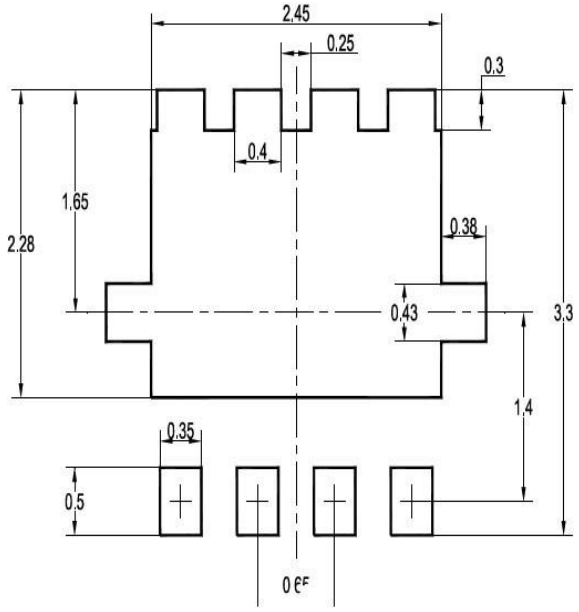
»Package Outline : PDFN 3x3



UNIT	A	A1	b	c	D1	D2	D3	D4	E	E1	E2	E3	E4
mm	0.9 0.7	0.05 0	0.35 0.24	0.25 0.1	2.6 2.4	0.5 0.3	2.7 2.5	3.2 3	3.1 2.9	3.3 3.1	1.85 1.65	0.68 0.48	0.43 0.23

UNIT	E5	E6	e	K	L	L1	L2	L3	θ1
mm	0.4 0.2	0.25 0.15	0.7 0.6	0.72 0.52	0.5 0.3	0.1 0	0.53 0.33	0.475 0.275	12° 0°

»PDFN 3x3 FOOTPRINT: (mm)



»Ordering information

Order code	Package	Base qty	Delivery mode
CT03NR005Q	PDFN3x3	3k	Tape and reel