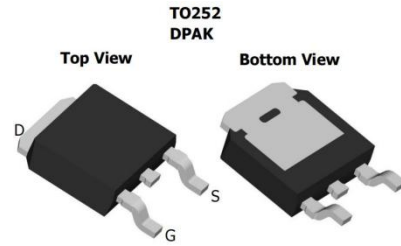




Product Summary

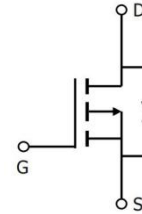
$V_{(BR)DSS}$	$R_{DS(ON)}$ max	I_D max
-88V	$<128m\Omega$ @ $V_{GS}=-12V$	-20A
	$<140m\Omega$ @ $V_{GS}=-10V$	

Package & Internal Circuit



Description and Applications

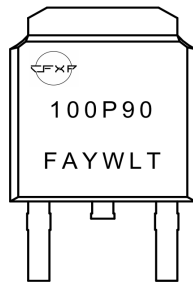
- The CFD100P90 uses advanced trench technology and design to provide excellent $R_{DS(ON)}$ with low gate charge.
- With the excellent thermal resistance of the DPAK package, this device is well suited for high current load applications.



Ordering Information

Part Number	Package Type	Package Qty
CFD100P90	TO-252	2,500/Tape&Reel

Marking Information



Green product

CFXP--Logo
100P90--Part Number
F--Fab location
A--Assembly location
Y--Year
W--Week
LT--Lot sequence

Absolute Maximum Rating ($T_{amb}=25^{\circ}C$ unless otherwise noted)

Parameter	Symbol	Value	Units
Drain-Source Voltage	V_{DS}	-88	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current - Continuous	$T_C = 25^{\circ}C$ I_D	-20	A
Pulsed Drain Current	$I_{D,pulse}$	-60	A
Single Pulse Avalanche Energy	$L=0.1mH$ E_{AS}	97	mJ
Power Dissipation	$T_C = 25^{\circ}C$ P_D	69.3	W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to 150	$^{\circ}C$

Thermal Characteristics

Parameter		Symbol	Typ	Max	Units
Maximum Junction-to-Ambient	Steady-State	$R_{\theta JA}$	45	-	°C/W
Maximum Junction-to-Case	Steady-State	$R_{\theta JC}$	1.9	-	°C/W

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

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	I _D = -250μA, V _{GS} =0V	-88			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =-80V, V _{GS} =0V			-1	uA
		T _J =55°C			-5	
I _{GSS}	Gate-Body leakage current	V _{DS} =0V, V _{GS} = ±20V			±100	nA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D = -250μA	-2.8	-3.3	-3.8	V
R _{DS(ON)}	Drain-Source on-Resistance	V _{GS} = -12V, I _D = -5A	90	108	128	mΩ
		V _{GS} = -10V, I _D = -10A	100	120	140	mΩ
g _{FS}	Forward Transconductance	V _{DS} =-5V, I _D =-15A		13		S
R _g	Gate resistance	f=1MHz		3.2		Ω
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{GS} = 0V V _{DS} = -25V f=1MHz		806		pF
C _{oss}	Output Capacitance			195		pF
C _{rss}	Reverse Transfer Capacitance			49		pF
Q _g	Total Gate Charge	V _{GS} = -10V V _{DS} = -50V I _D = -10A		11.9		nC
Q _{gs}	Gate Source Charge			4.63		nC
Q _{gd}	Gate Drain Charge			2.33		nC
t _{D(on)}	Turn-On DelayTime	V _{GS} = -10V V _{DS} = -10V R _L = 2.5Ω R _G = 3Ω		6.2		ns
t _r	Turn-On Rise Time			10.2		ns
t _{D(off)}	Turn-Off DelayTime			9.7		ns
t _f	Turn-Off Fall Time			2.4		ns
Drain-Source Body Diode Characteristics						
V _{SD}	Body Diode Forward Voltage	I _S = -1A V _{GS} = 0V		-0.73	-1	V
t _{rr}	Body Diode Reverse Recovery Time	I _F = -20A di/dt =200 A/μs		50		ns
Q _{rr}	Body Diode Reverse Recovery Charge			131		nC

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

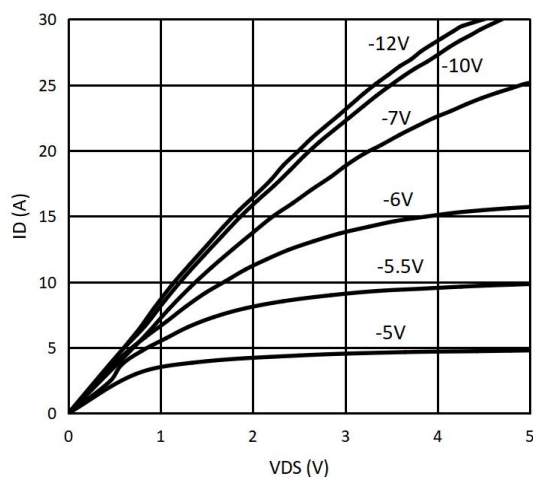


Figure 1: On-Region Characteristics

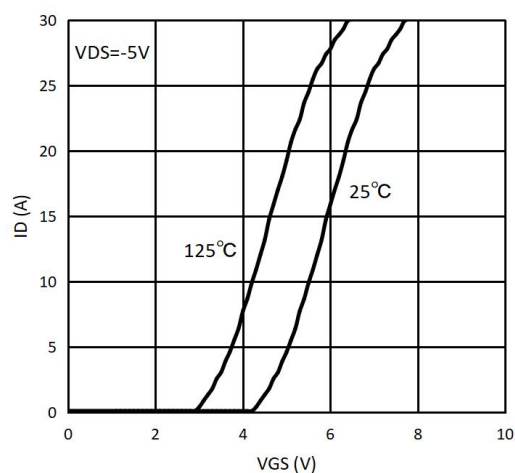


Figure 2: Transfer Characteristics

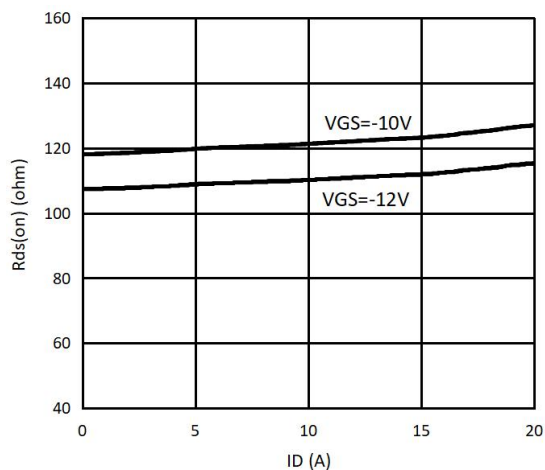


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

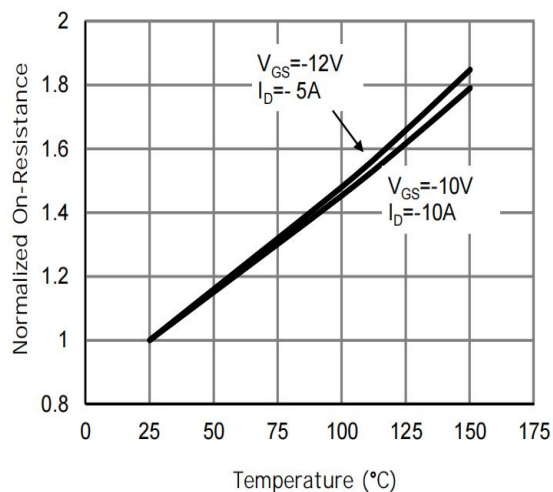


Figure 4: On-Resistance vs. Junction Temperature

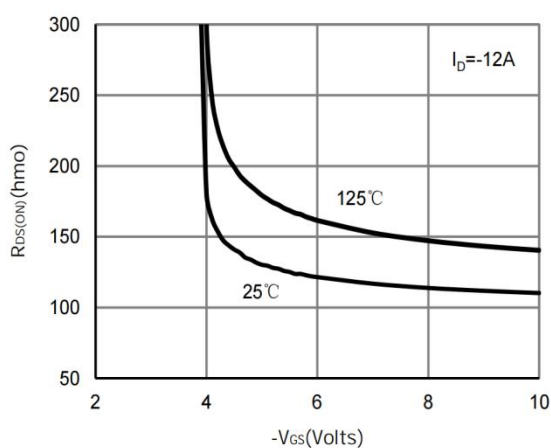


Figure 5: On-Resistance vs. Gate-Source Voltage

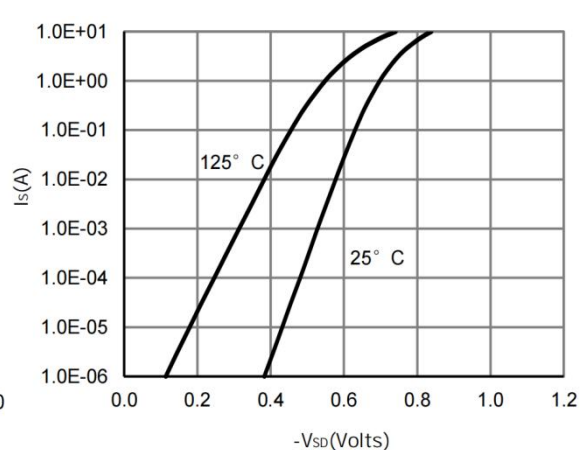


Figure 6: Body-Diode Characteristics

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

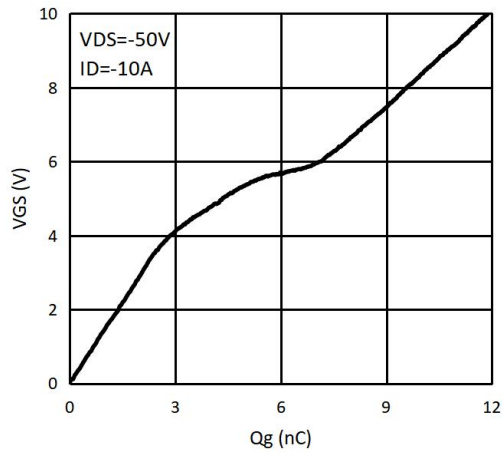


Figure 7: Gate-Charge Characteristics

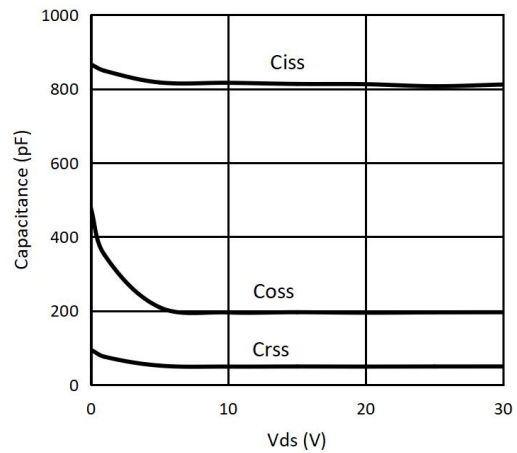


Figure 8: Capacitance Characteristics

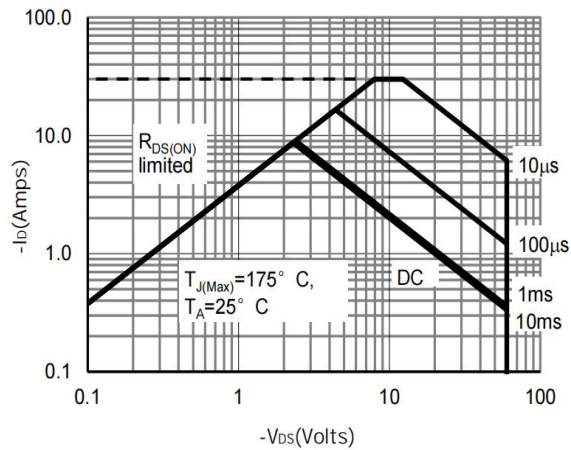


Figure 9: Maximum Forward Biased Safe Operating Area

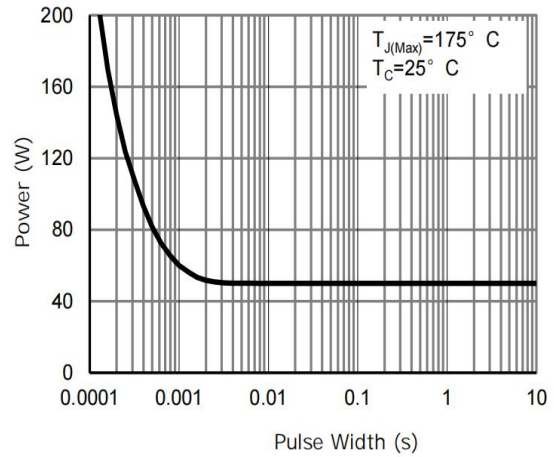


Figure 10: Single Pulse Power Rating Junction-to-Case

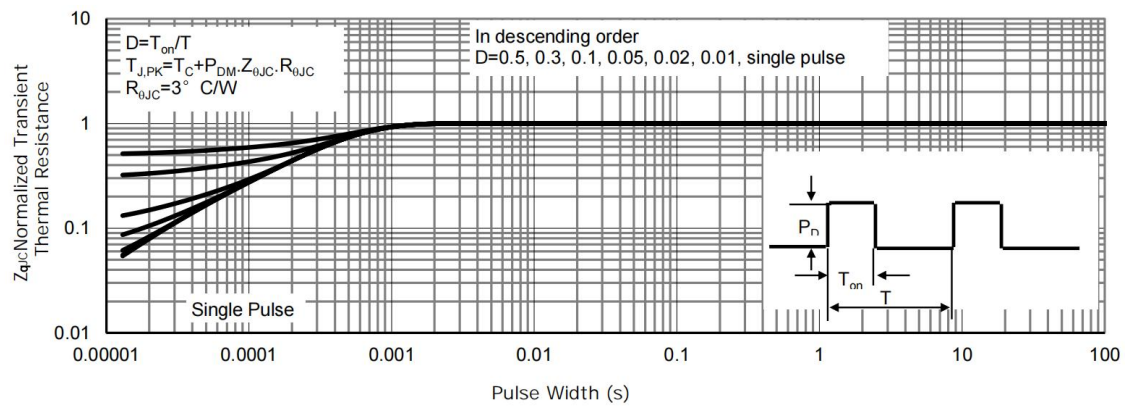
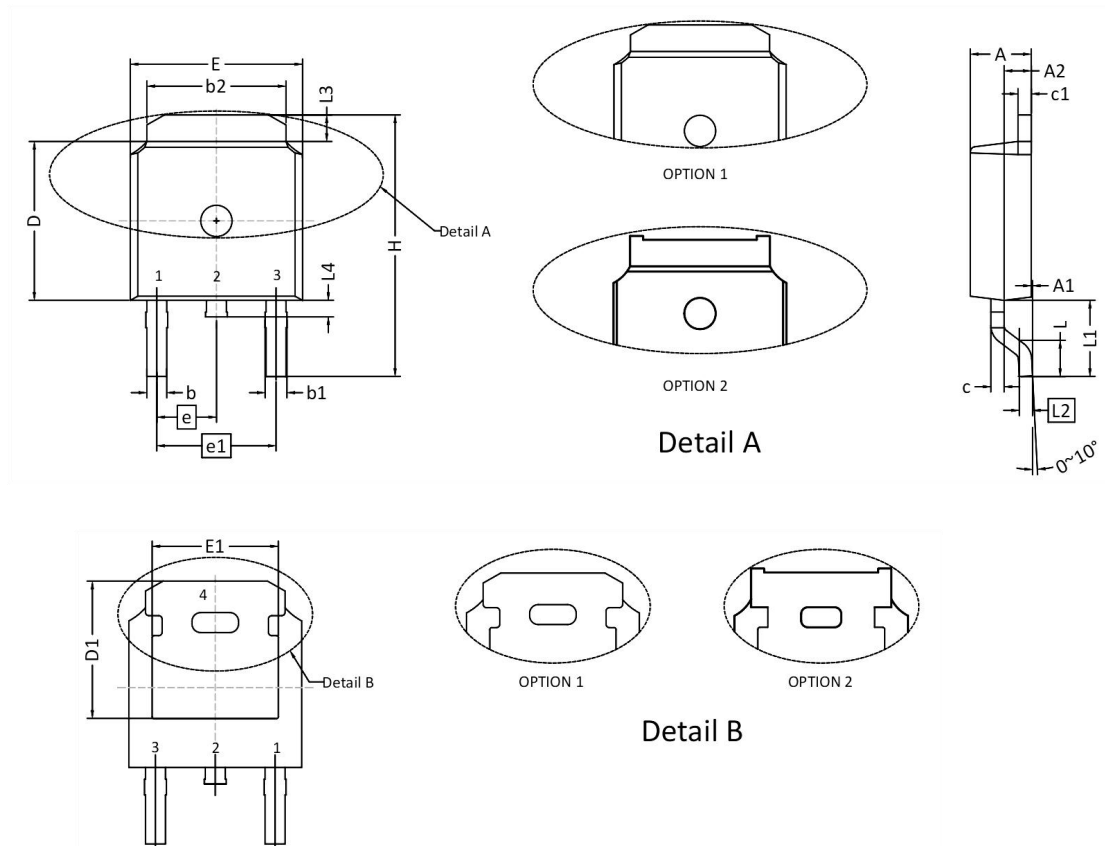


Figure 11: Normalized Maximum Transient Thermal Impedance

TO-252 Package



SYMBOLS	DIMENSION IN MM			DIMENSION IN INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	2.184	2.286	2.400	0.0860	0.0900	0.0945
A1	0.000	---	0.200	0.0000	---	0.0079
A2	0.889	1.041	1.170	0.0350	0.0410	0.0461
b	0.635	0.762	0.889	0.0250	0.0300	0.0350
b1	0.680	0.840	1.143	0.0268	0.0331	0.0450
b2	4.953	5.340	5.500	0.1950	0.2102	0.2165
c	0.450	0.508	0.610	0.0177	0.0200	0.0240
c1	0.450	0.508	0.630	0.0177	0.0200	0.0248
D	5.969	6.096	6.223	0.2350	0.2400	0.2450
D1	5.210	5.249	5.380	0.2051	0.2067	0.2118
E	6.350	6.604	6.800	0.2500	0.2600	0.2677
E1	4.318	4.826	4.920	0.1700	0.1900	0.1937
e	2.286BSC			0.0900BSC		
e1	4.572BSC			0.1800BSC		
H	9.398	10.033	10.500	0.3700	0.3950	0.4134
L	1.270	1.520	2.032	0.0500	0.0598	0.0800
L1	2.921REF			0.1150REF		
L2	0.408	0.508	0.608	0.0161	0.0200	0.0239
L3	0.889	1.016	1.270	0.0350	0.0400	0.0500
L4	0.600	---	1.016	0.0236	---	0.0400

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