

350V N+P Dual Channel MOSFETs

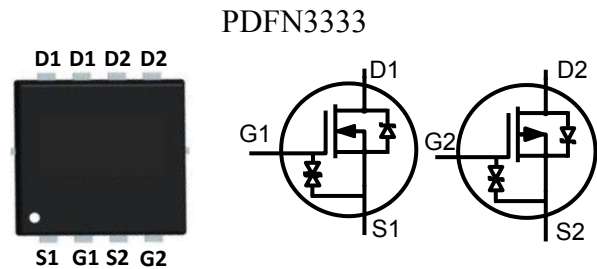
General Features

- Proprietary Advanced Planar Technology
- Rugged Polysilicon Gate Cell Structure
- Fast Switching Speed
- RoHS Compliant
- Halogen-free available

BV_{DSX}	R_{DS(ON)} (Max.)	I_D
350V	15 Ω	300mA
-350V	30 Ω	-200mA

Applications

- Power Management
- Load Switch
- Motor Driver



Ordering Information

Part Number	Package	Marking	Remark
FTF15C35G	PDFN3333	15C35	Halogen Free

Absolute Maximum Ratings

T_A=25°C unless otherwise specified

Symbol	Parameter	N channel	P channel	Unit
V _{DSS}	Drain-to-Source Voltage ^[1]	350	-350	V
V _{GS}	Gate-to-Source Voltage	±20	±20	V
I _D	Continuous Drain Current	0.3	-0.2	A
I _{DP}	300us Pulsed Drain Current Tested ^[2]	1.2	-0.8	A
P _D	Power Dissipation	2.5		W
T _J and T _{STG}	Operating and Storage Temperature Range	-55 to 150		°C

**Drain Current limited by Maximum Junction Temperature.*

Caution: Stresses greater than those listed in the "Absolute Maximum Ratings" may cause permanent damage to the device.

Thermal Characteristics

Symbol	Parameter	FTF15C35G	Unit
R _{θJA}	Thermal Resistance, Junction-to-Ambient	45	°C/W

Electrical Characteristics

N-Channel OFF Characteristics

 $T_A=25^{\circ}\text{C}$ unless otherwise specified

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions
BV_{DSX}	Drain-to-Source Breakdown Voltage	350	--	--	V	$V_{GS}=0V, I_D=250\mu A$
I_{DSS}	Drain-to-Source Leakage Current	--	--	1	μA	$V_{DS}=350V, V_{GS}=0V$
		--	--	100	μA	$V_{DS}=350V, V_{GS}=0V$ $T_J=125^{\circ}\text{C}$
I_{GSS}	Gate-to-Source Leakage Current	--	--	20	μA	$V_{GS}=+20V, V_{DS}=0V$
		--	--	-20	μA	$V_{GS}=-20V, V_{DS}=0V$

ON Characteristics

 $T_A=25^{\circ}\text{C}$ unless otherwise specified

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions
$R_{DS(ON)}$	Static Drain-to-Source On-Resistance	--	8	15	Ω	$V_{GS}=10V, I_D=300mA^{[3]}$
$V_{GS(TH)}$	Gate Threshold Voltage	1	--	3	V	$V_{GD}=0V, I_D=250\mu A$

Dynamic Characteristics

Essentially independent of operating temperature

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions
C_{ISS}	Input Capacitance	--	32.58	--	pF	$V_{GS}=0V$ $V_{DS}=25V$ $f=1.0\text{MHZ}$
C_{OSS}	Output Capacitance	--	5.36	--		
C_{RSS}	Reverse Transfer Capacitance	--	0.75	--		
$t_{d(ON)}$	Turn-on Delay Time	--	14	--	ns	$V_{DD}=25V,$ $I_D=-80mA$ $R_G=25\Omega$ $V_{GS}=10V\sim 0V$
t_{rise}	Rise Time	--	10	--		
$t_{d(OFF)}$	Turn-off Delay Time	--	24	--		
t_{fall}	Fall Time	--	36	--		

Source-Drain Diode Characteristics

 $T_A=25^{\circ}\text{C}$ unless otherwise specified

Symbol	Parameter	Min	Typ.	Max.	Units	Test Conditions
V_{SD}	Diode Forward Voltage	--	--	1.2	V	$I_{SD}=300mA, V_{GS}=0V$

**P-Channel
OFF Characteristics**
 $T_A=25^{\circ}\text{C}$ unless otherwise specified

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions
BV_{DSX}	Drain-to-Source Breakdown Voltage	-350	--	--	V	$V_{GS}=0V, I_D=250\mu A$
I_{DSS}	Drain-to-Source Leakage Current	--	--	-1	μA	$V_{DS}=-350V, V_{GS}=0V$
		--	--	-100	μA	$V_{DS}=-350V, V_{GS}=0V$ $T_J=125^{\circ}\text{C}$
I_{GSS}	Gate-to-Source Leakage Current	--	--	20	μA	$V_{GS}=+20V, V_{DS}=0V$
		--	--	-20	μA	$V_{GS}=-20V, V_{DS}=0V$

ON Characteristics
 $T_A=25^{\circ}\text{C}$ unless otherwise specified

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions
$R_{DS(ON)}$	Static Drain-to-Source On-Resistance	--	18	30	Ω	$V_{GS}=-10V, I_D=-200mA^{[3]}$
$V_{GS(TH)}$	Gate Threshold Voltage	-1	--	-3	V	$V_{GD}=0V, I_D=-250\mu A$

Dynamic Characteristics

Essentially independent of operating temperature

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions
C_{ISS}	Input Capacitance	--	43.39	--	pF	$V_{GS}=0V$ $V_{DS}=-25V$ $f=1.0\text{MHZ}$
C_{OSS}	Output Capacitance	--	6.94	--		
C_{RSS}	Reverse Transfer Capacitance	--	0.84	--		
$t_{d(ON)}$	Turn-on Delay Time	--	12	--	ns	$V_{DD}=-25V$ $I_D=-80mA$ $R_G=25\Omega$ $V_{GS}=-10V\sim 0V$
t_{rise}	Rise Time	--	60	--		
$t_{d(OFF)}$	Turn-off Delay Time	--	136	--		
t_{fall}	Fall Time	--	320	--		

Source-Drain Diode Characteristics
 $T_A=25^{\circ}\text{C}$ unless otherwise specified

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
V_{SD}	Diode Forward Voltage	--	--	-1.2	V	$I_{SD}=-200mA, V_{GS}=0V$

NOTE:

[1] $T_J=+25^{\circ}\text{C}$ to $+150^{\circ}\text{C}$

[2] Repetitive rating, pulse width limited by maximum junction temperature.

[3] Pulse width $\leq 380\mu s$; duty cycle $\leq 2\%$.

Typical Characteristics

Figure 1. Maximum Power Dissipation vs. Case Temperature

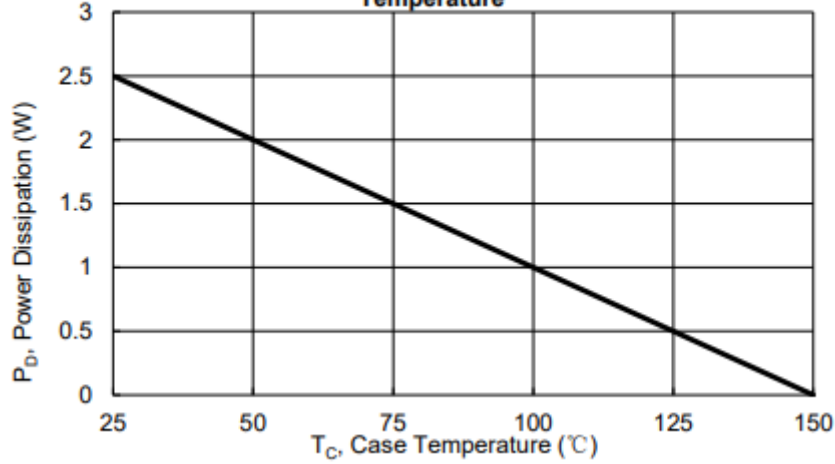


Figure 2. N channel Maximum Continuous Drain Current vs Case Temperature

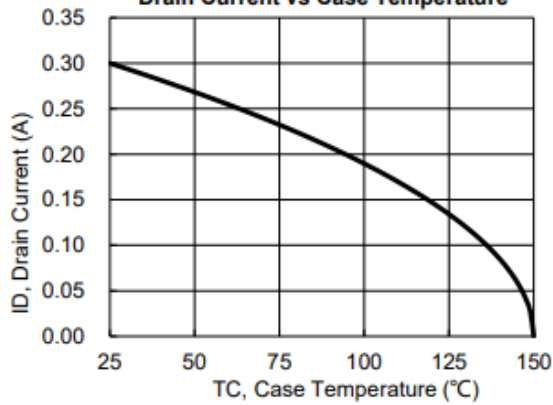


Figure 3. P channel Maximum Continuous Drain Current vs Case Temperature

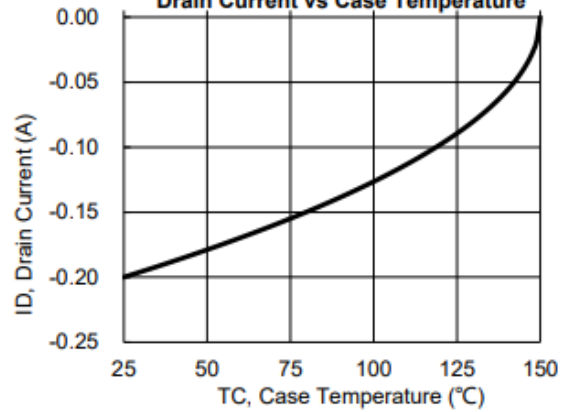


Figure 4. N channel Typical Capacitance vs. Drain-to-Source Voltage

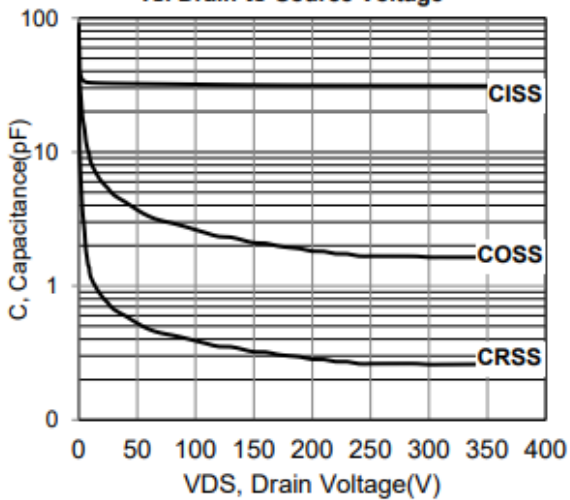
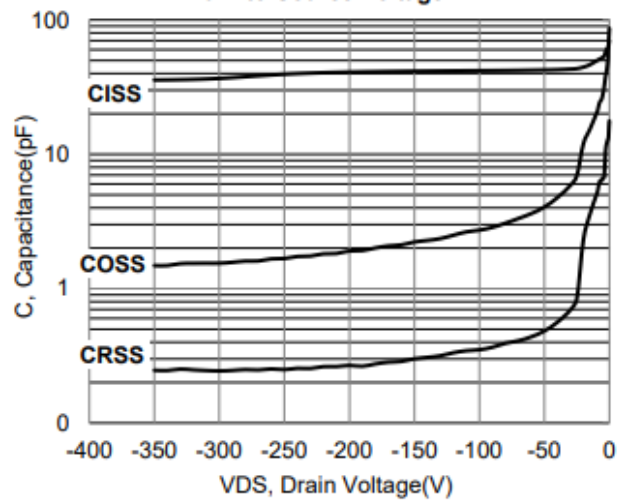
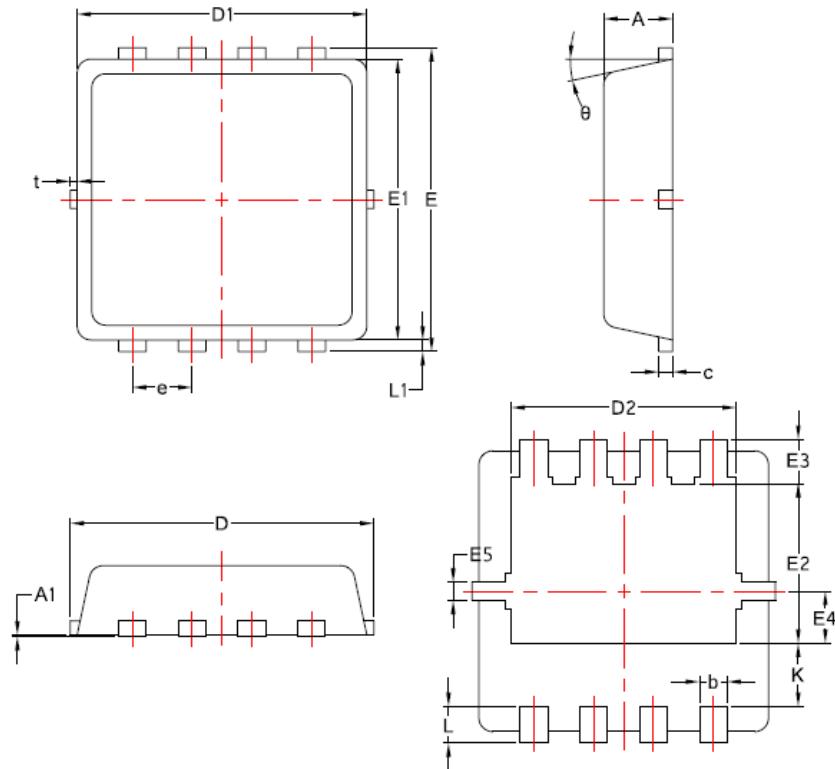


Figure 5. P channel Typical Capacitance vs. Drain-to-Source Voltage



Package Dimensions
PDFN3333

SYMBOL	COMMON		
	MM		
	MIN	NOM	MAX
A	0.70	0.75	0.85
A1	/	/	0.05
b	0.20	0.30	0.40
c	0.10	0.152	0.25
D	3.15	3.30	3.45
D1	3.00	3.15	3.25
D2	2.29	2.45	2.65
E	3.15	3.30	3.45
E1	2.90	3.05	3.20
E2	1.54	1.74	1.94
E3	0.28	0.48	0.65
E4	0.37	0.57	0.77
E5	0.10	0.20	0.30
e	0.60	0.65	0.70
K	0.59	0.69	0.89
L	0.30	0.40	0.50
L1	0.06	0.125	0.20
t	0	0.075	0.13
θ	10°	12°	14°





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