

350V N+P Dual Channel MOSFETs

General Features

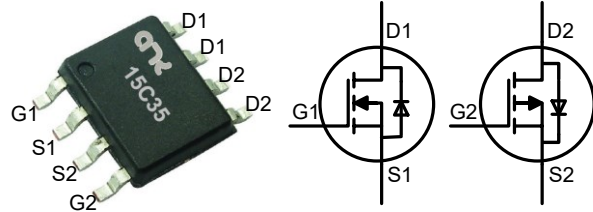
- Proprietary Advanced Planar Technology
- Rugged Polysilicon Gate Cell Structure
- Fast Switching Speed
- RoHS Compliant
- Halogen-free available

BV _{DSS}	R _{DS(ON)} (Max.)	I _D
350V	15Ω	300mA
-350V	30Ω	-200mA

SOP-8

Applications

- Power Management
- Load Switch
- Motor Driver



Ordering Information

Part Number	Package	Marking	Remark
FTE15C35G	SOP-8	15C35	Halogen Free

Absolute Maximum Ratings (T_A=25°C unless otherwise noted)

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	FTE15C35G	Unit
R _{θJA}	Thermal Resistance, Junction-to-Ambient	50	°C/W

Electrical Characteristics

N-channel

OFF Characteristics ($T_A=25^\circ\text{C}$ unless otherwise noted)

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	$V_{DS}=350V, V_{GS}=0V$ $T_J=125^\circ C$
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 noted)

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	$V_{GS}=0V$ $V_{DS}=25V$ $f=1.0MHz$
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 noted)

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 noted)

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

ON Characteristics($T_A=25^{\circ}\text{C}$ unless otherwise noted)

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

Dynamic Characteristics (Essentially independent of operating temperature)

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

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

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 $\leq 380\mu\text{s}$; duty cycle $\leq 2\%$.

Figure 1. Maximum Power Dissipation vs. Case Temperature

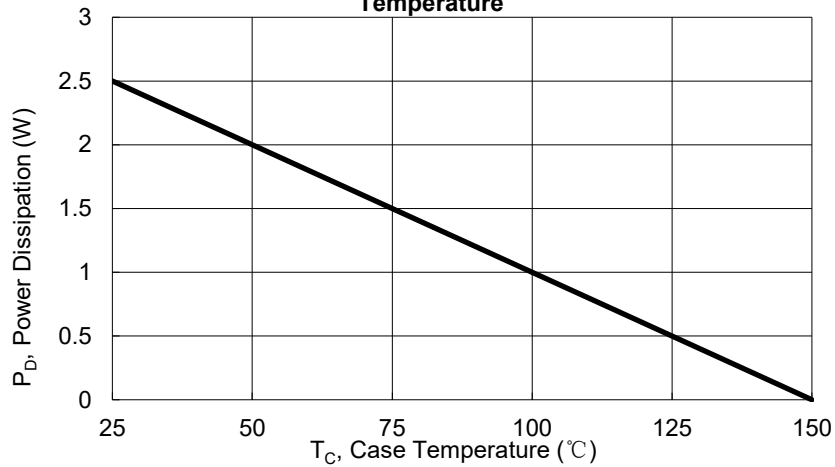


Figure 2. N channel Maximum Continuous Drain Current vs Case Temperature

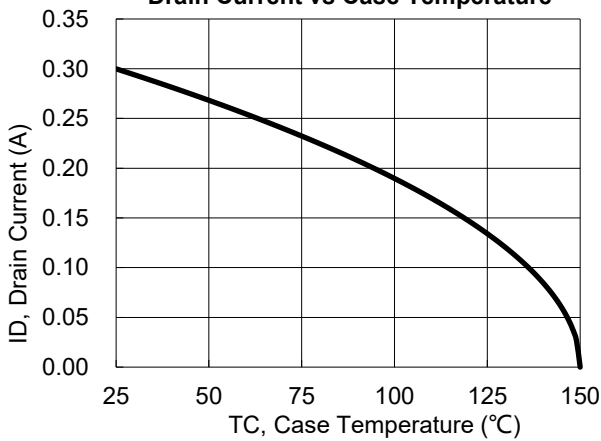


Figure 3. P channel Maximum Continuous Drain Current vs Case Temperature

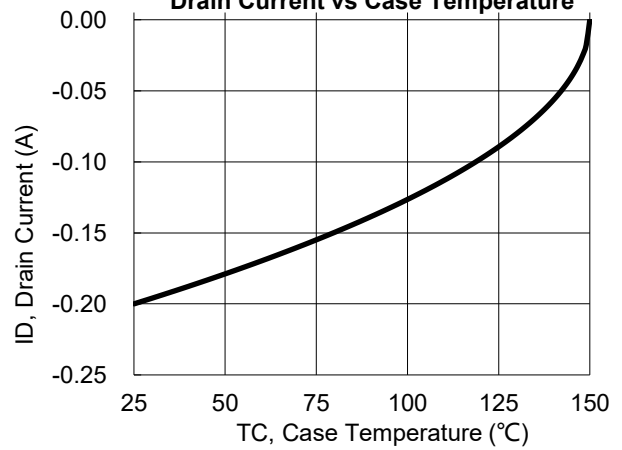


Figure 4. N channel Typical Capacitance vs. Drain-to-Source Voltage

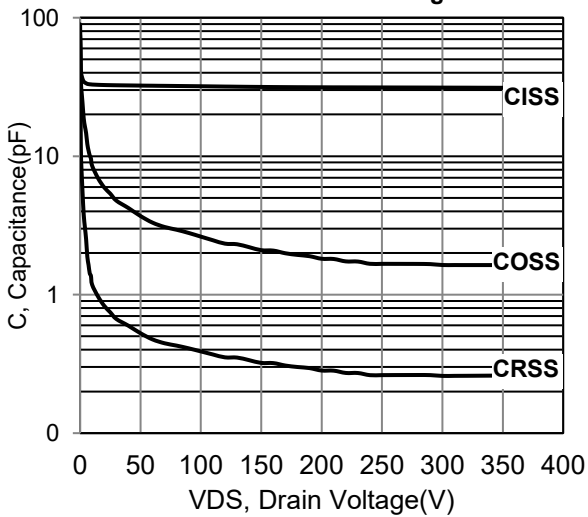
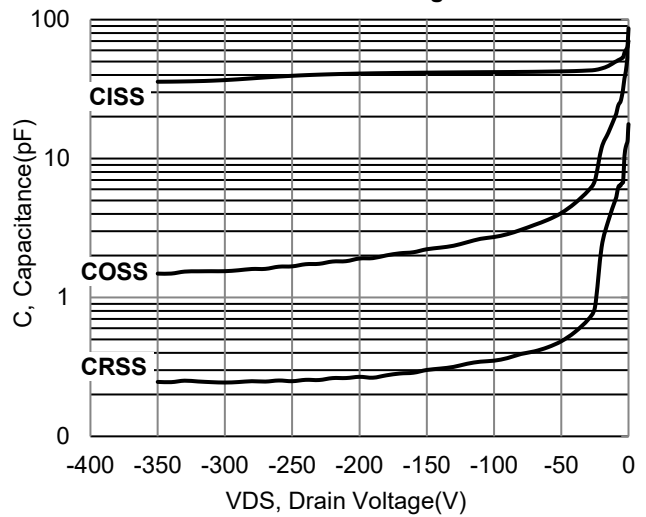
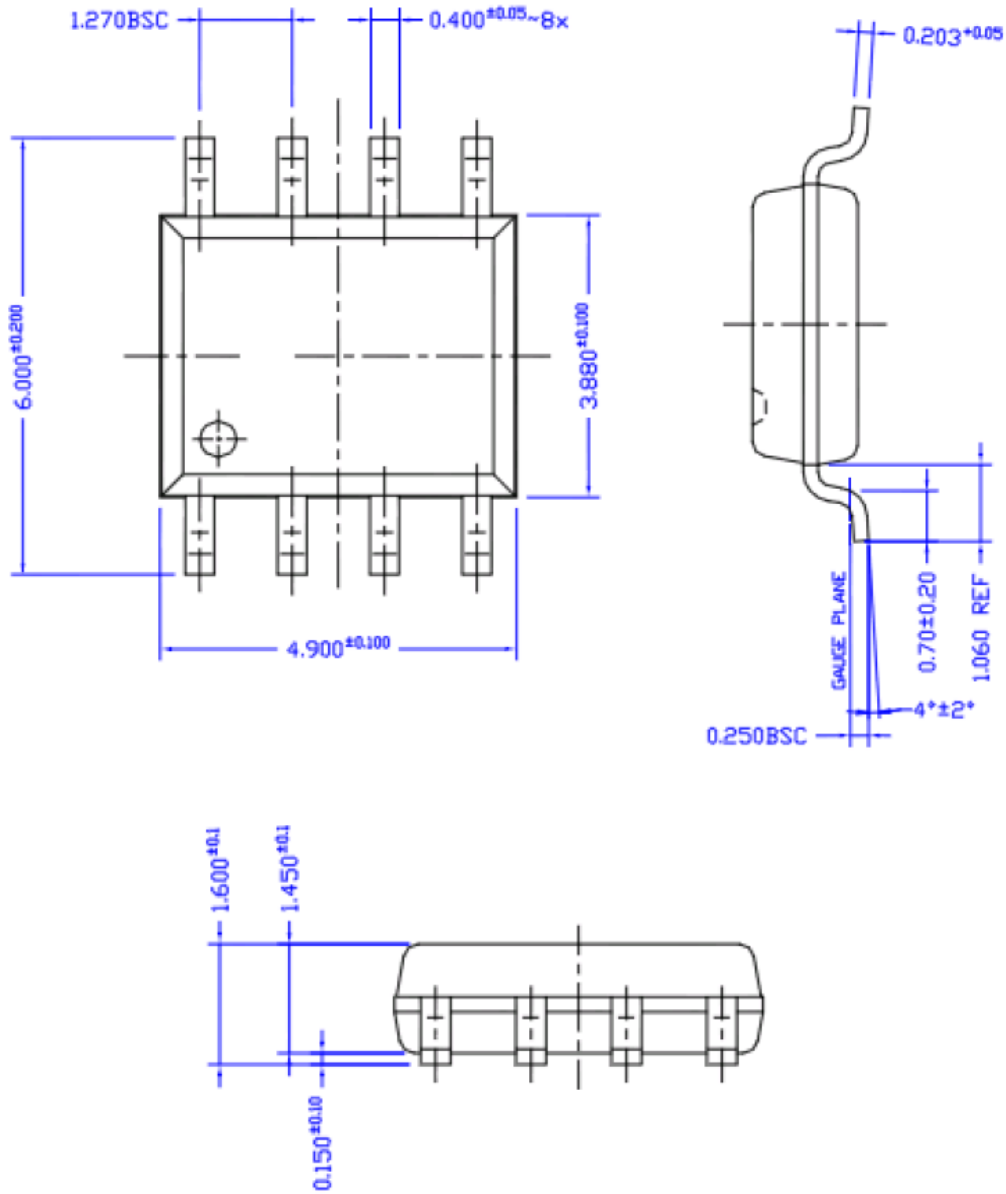


Figure 5. P channel Typical Capacitance vs. Drain-to-Source Voltage



Package Dimensions

SOP-8



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