P-Channel Enhancement Mode Field Effect Transistor
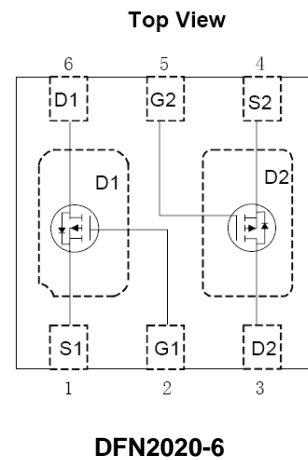
● **Features**

High density Cell Design for Low $R_{DS(ON)}$

Voltage controlled small signal switch

Reliable and Rugged

● **General Description**

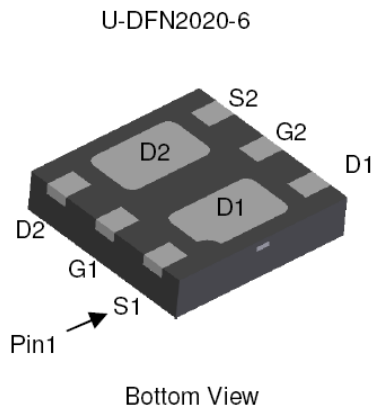These P-Channel enhancement mode field effect transistors are produced using high cell density, DMOS technology.

● **Pin Configurations**

U-DFN2020-6

Bottom View

Top View

DFN2020-6

● **Absolute Maximum Ratings**

@T_A=25℃ unless otherwise noted

Parameter	Symbol	Ratings	Unit
Drain - Source Voltage	V_{DSS}	-20	V
Gate –Source Voltage	V_{GS}	±8	V
Drain Current (Continuous)	I_D	-2.8	A
Drain Current (Pulse)	I_{DP}	-10	A
Power Dissipation	P_D	1.25	W
Operating Temperature	T_J	-55~150	℃
Storage Temperature	T_{STG}	-55~150	℃

- **Electrical Characteristics** @T_A=25℃ unless otherwise noted

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D=-250uA	-20			V
Drain Cut-off Current	I_{DSS}	V_{DS} = -20 V , V_{GS} = 0V	--	--	-1	uA
Gate-Source Leakage Current	I_{GSS}	V_{GS} =±8 V , V_{DS} = 0V	--	--	±110	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(th)}$	I_D = -250 uA , V_{DS} = V_{GS}	-0.45	--	-1.5	V
Drain-Source On-state Resistance	$R_{DS(on)}$	I_D =-2.8 A , V_{GS} = -4.5V	--	--	73	mΩ
		I_D = -2A , V_{GS} = -2.5V	--	--	116	mΩ
Forward Transconductance	g_{FS}	V_{DS} = -5V, I_D = -2.8A	--	6.5	--	S
On-State Drain Current[1]	$ID_{(on)}$	V_{DS} = –5V, V_{GS} = –4.5V	-6	--	--	A
		V_{DS} = –5V, V_{GS} = –2.5V	-3	--	--	
DYNAMIC CHARACTERISTICS						
Input Capacitance	C_{iss}	V_{DS} = -6V , V_{GS} = 0V f = 1 MHz	--	415	--	pF
Output Capacitance	C_{oss}		--	223	--	pF
Feedback Capacitance	C_{rss}		--	87	--	pF
SWITCHING CHARACTERISTICS						
Turn-on Delay Time	$t_{d(on)}$	V_{DD} = -6V , R_L = 6 Ω , I_D = -1.0A, V_{GEN} = -4.5V, R_G = 6 Ω	--	13	25	ns
Turn-off Delay Time	$t_{d(off)}$		--	42	70	ns
DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS						
Drain-Source Diode Forward Current	I_S	--	--	--	-0.75	A
Drain-Source Diode Forward Voltage	V_{SD}	Is = -1.6A, V_{GS} = 0V	-0.5	--	-1.2	V

Notes:

1. Pulse width limited by maximum junction temperature. Pulse test: PW≤300μs, duty cycle≤2%.

2. For design AID only, not subject to production testing. Switching time is essentially independent of operating temperature.

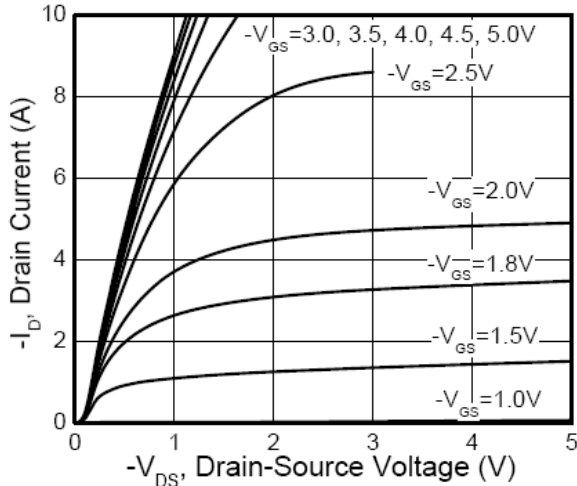- **Typical Performance Characteristics**
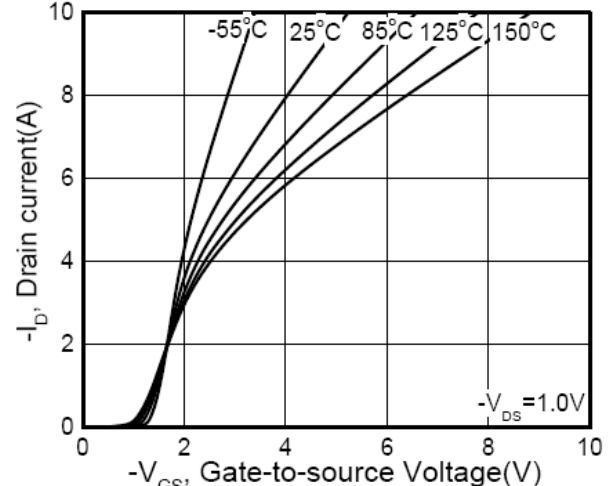

Figure 1. Output Characteristics
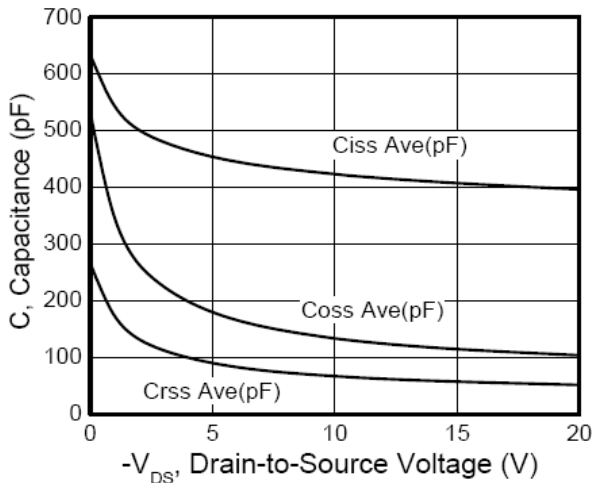

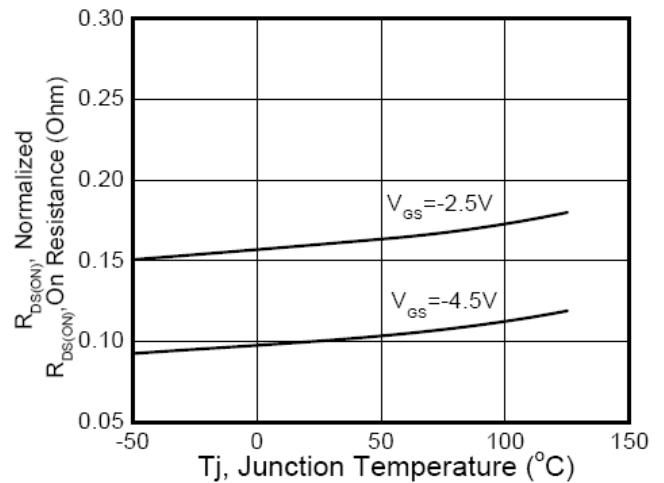Figure 2. Transfer Characteristics

Figure 3. Capacitance

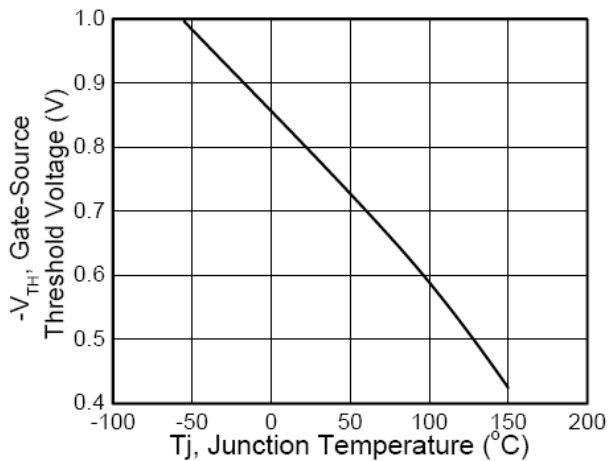Figure 4. On Resistance Vs. Temperature

Figure 5. Gate Thershold Vs. Temperature
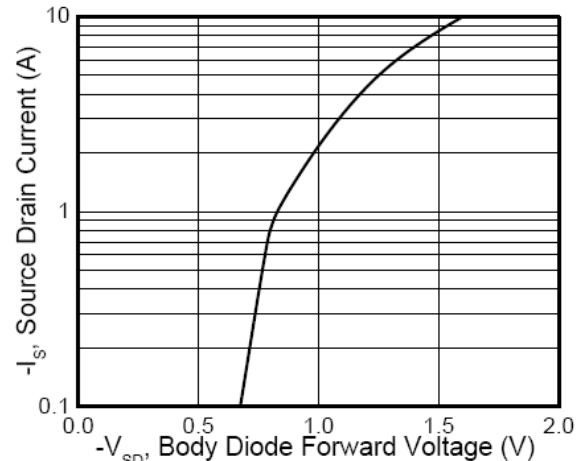
Figure 6. Body Diode Forward Voltage Vs. Source Current

3 / 4

● **Package Information**
  DFN2020-6
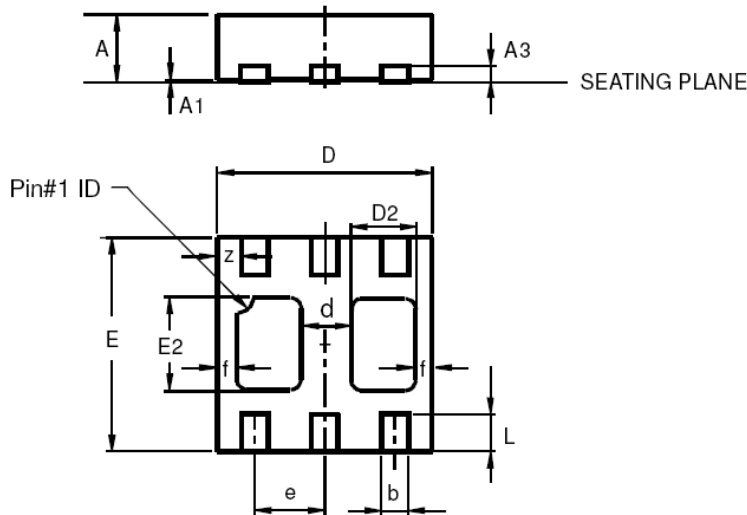
U-DFN2020-6 Type B			
Dim	**Min**	**Max**	**Typ**
A	0.545	0.605	0.575
A1	0	0.05	0.02
A3	—	—	0.13
b	0.20	0.30	0.25
D	1.95	2.075	2.00
d	—	—	0.45
D2	0.50	0.70	0.60
e	—	—	0.65
E	1.95	2.075	2.00
E2	0.90	1.10	1.00
f	—	—	0.15
L	0.25	0.35	0.30
z	—	—	0.225
All Dimensions in mm			
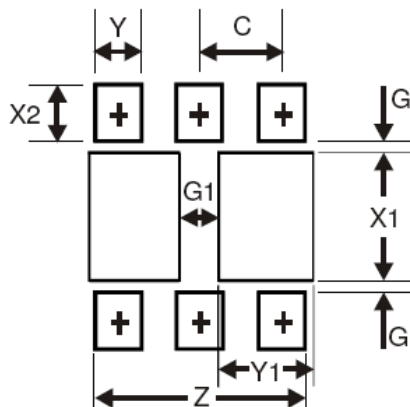
Dimensions	Value (in mm)
Z	1.67
G	0.20
G1	0.40
X1	1.0
X2	0.45
Y	0.37
Y1	0.70
C	0.65

IMPORTANT NOTICE

The information in this document has been carefully reviewed and is believed to be accurate. Nonetheless, this document is subject to change without notice. FORSEMI assumes no responsibility for any inaccuracies that may be contained in this document, and makes no commitment to update or to keep current the contained information, or to notify a person or organization of any update. FORSEMI reserves the right to make changes, at any time, in order to improve reliability, function or design and to attempt to supply the best product possible.