P-Channel Enhancement Mode MOSFET

TBL1216DF1

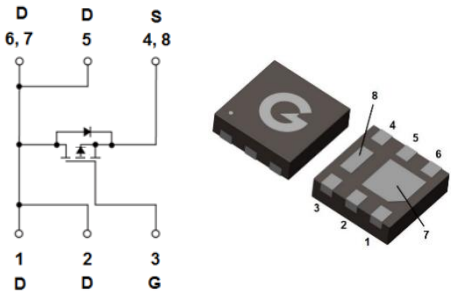
Features

HF

- Super low gate charge
- Ultra low on-resistance
- RoHS compliant with Halogen-free
- Qualified to AEC-Q101 Standards

Mechanical Data

- Case: DFN2020-6L
- Molding Compound: UL Flammability Classification Rating 94V-0
- Terminals: Matte tin-plated leads; solderability-per MIL-STD-202, Method 208



DFN2020-6L

Ordering Information

Part Number	Package	Shipping Quantity	Marking Code
TBL1216DF1	DFN2020-6L	3000 pcs / Tape & Reel	1216

Maximum Ratings (@ T_A = 25°C unless otherwise specified)

Parameter	Symbol	Value	Unit
Drain-to-Source Voltage	V_{DSS}	-15	V
Gate-to-Source Voltage	V_{GSS}	±12	V
Continuous Drain Current (T_A = 25°C)	I_D	-8	A
Continuous Drain Current (T_C = 25°C)		-16	A
Pulsed Drain Current *2	I_{DM}	-32	A

Thermal Characteristics

Parameter	Symbol	Value	Unit
Power Dissipation (T_A = 25°C) *1	P_D	2.5	W
Thermal Resistance Junction-to-Air *1	$R_{\theta JA}$	50	°C/W
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	13	°C/W
Operating Junction Temperature Range	T_J	-55 ~ +150	°C
Storage Temperature Range	T_{STG}	-55 ~ +150	°C

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

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
V_{DSS}	Drain-Source Breakdown Voltage	V_{GS} = 0V, I_D = -250μA	-15	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = -15V, V_{GS} = 0V	-	-	-1	μA
I_{GSS}	Gate-Body Leakage Current	V_{GS} = ±8V, V_{DS} = 0V	-	-	±100	nA
On Characteristics						
$R_{DS(ON)}$	Drain-Source On-resistance *3	V_{GS} = -4.5V, I_D = -6.7A	-	15.5	22	mΩ
		V_{GS} = -2.5V, I_D = -6.2A	-	20	28	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} = V_{GS}, I_D = -250μA	-0.4	0.7	-1	V
g_{FS}	Forward Tranconductance	V_{DS} = -10V, I_D = -6.7A	-	40	-	S
Dynamic Characteristics						
C_{ISS}	Input Capacitance	V_{GS} = 0V V_{DS} = -10V f = 1.0MHz	-	2700	-	pF
C_{OSS}	Output Capacitance		-	680	-	
C_{RSS}	Reverse Transfer Capacitance		-	590	-	
Switching Characteristics						
Q_G	Total Gate-Charge	V_{GS} = -4.5V V_{DD} = -6V I_D = -10A	-	35	-	nC
Q_{GS}	Gate to Source Charge		-	5	-	
Q_{GD}	Gate to Drain (Miller) Charge		-	10	-	
Source-Drain Diode Characteristics						
V_{SD}	Diode Forward Voltage *3	I_{SD} = -8A, V_{GS} = 0V	-	-	-1.2	V

Notes:

1. The data tested by surface mounted on a 1 inch^2 FR-4 board with 2OZ copper
2. Repetitive rating : Pulse width limited by maximum junction temperature
3. The data tested by pulsed, pulse width ≤ 300μs, duty cycle ≤ 2%

Ratings and Characteristics Curves (@ T_A = 25°C unless otherwise specified)

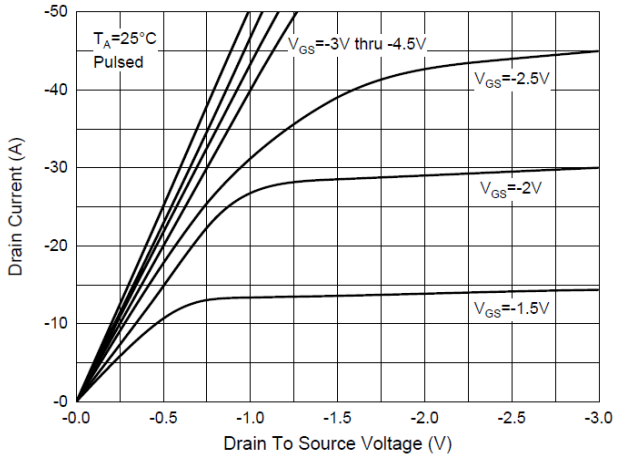


Fig 1 Output Characteristics

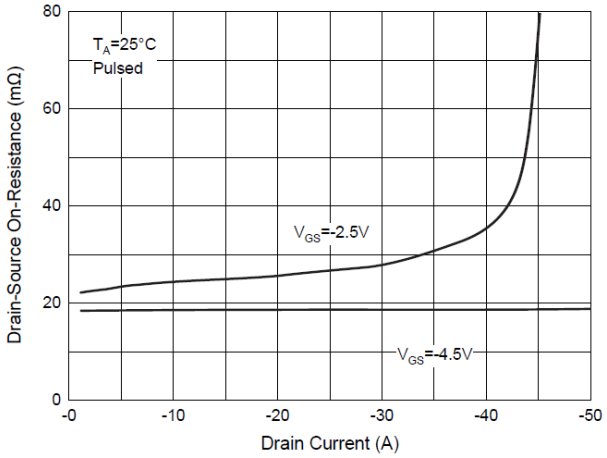


Fig 2 On-Resistance vs. Drain Current and Gate Voltage

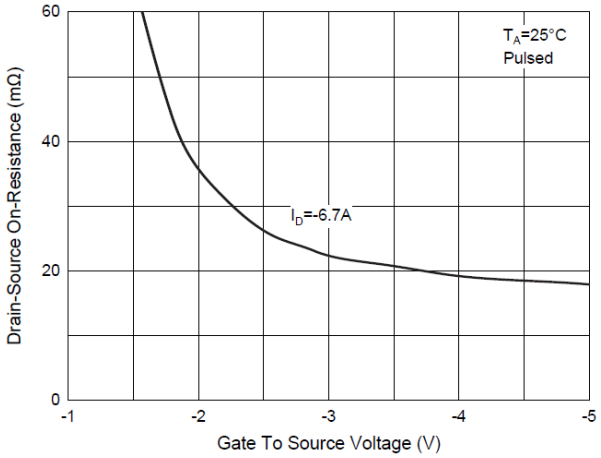


Fig 3 On-Resistance vs. Gate-Source Voltage

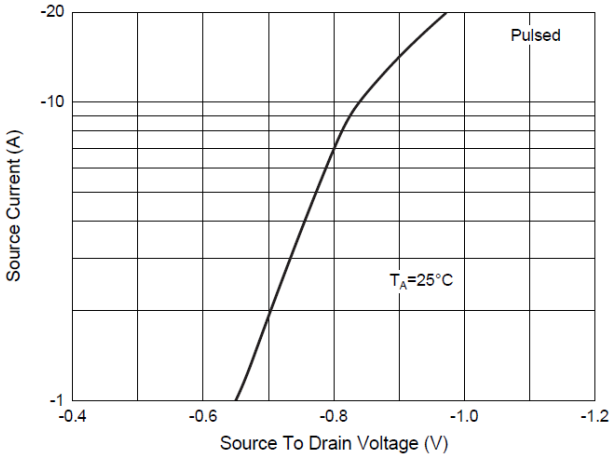


Fig 4 Body-Diode Characteristics

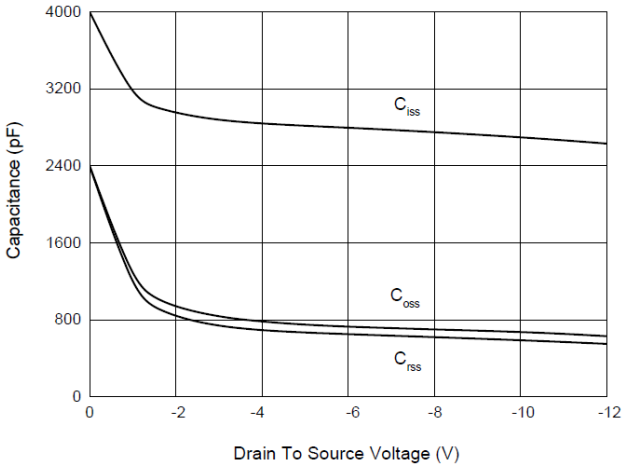


Fig 5 Capacitance Characteristics

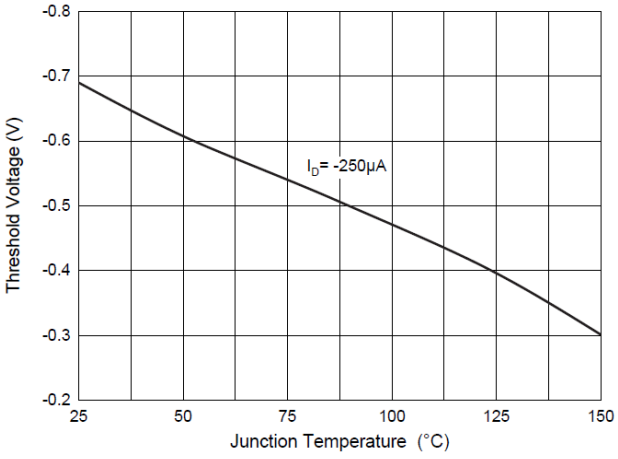
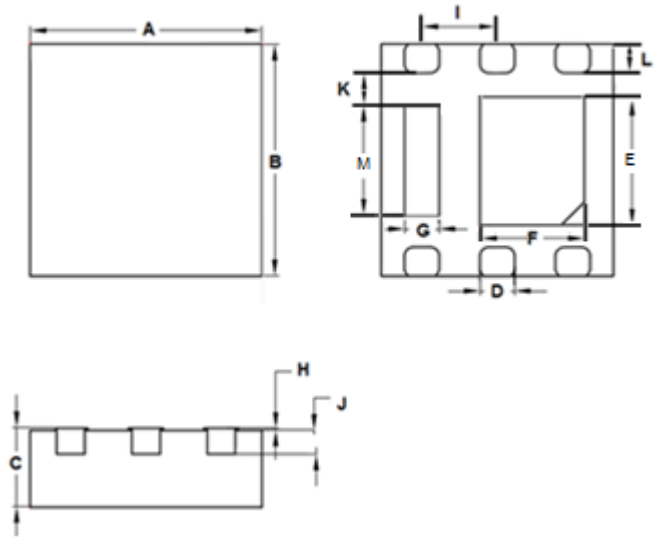


Fig 6 $V_{GS(th)}$ vs. Junction Temperature

Package Outline Dimensions (Unit: mm)



DFN2020-6L		
Dimension	**Min.**	**Max.**
A	1.924	2.076
B	1.924	2.076
C	0.500	0.600
D	0.250	0.350
E	0.900	1.100
F	0.850	1.050
G	0.200	0.400
H	0.000	0.050
I	0.550	0.750
J	0.103	0.303
K	0.150	0.350
L	0.200	0.400
M	0.700	0.900

Mounting Pad Layout (Unit: mm)

DFN2020-6L

