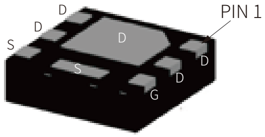
FEATURES

- Side wettable flanks for optical solder inspection
- ElectroStatic Discharge (ESD) protection > 1 kV HBM (class H1C)
- Trench MOSFET technology
- Meet AEC-Q101 Requirements

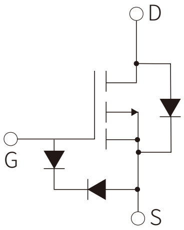


DFN2020-6L

Marking

APPLICATION

- DC to DC conversion
- High-speed line driver
- Low-side load switch
- Switching circuits



Schematic Symbol

APPROVALS

RoHS	Compliance with 2011/65/EU
HF	Compliance with IEC61249-2-21:2003

ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-20	V
Drain Current (Pulsed)	I_{DM}	-28	A
Drain Current	I_D	-7	A
Gate-Source Voltage T_C=25°C	V_{GS}	±12	V
Total Power Dissipation	P_{tot}	19	W
Junction Temperature	T_J	-55 to 175	°C
Storage Temperature	T_{STG}	-55 to 175	°C
Thermal Resistance –Junction to Ambient	$R_{\theta JA}^{*}$	76	°C/W

ELECTRICAL CHARACTERISTICS (T_A=25°C)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source Breakdown Voltage	BV_{DSS}	V_{GS}=0V,I_D=-250μA	-20			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=-250μA	-0.45	-0.65	-1.0	V
Drain Leakage Current	I_{DSS}	V_{DS}=-20V,V_{GS}=0V			-1	μA
Gate Leakage Current	I_{GSS}	V_{GS}=±10V ,V_{DS}=0V			±10	μA
On-State Resistance	$R_{DS(on)}$	V_{GS}=-4.5V,I_D=-2.0A		27	35	mΩ
		V_{GS}=-2.5V,I_D=-1.5A		34	42.5	mΩ
Diode Characteristics						
Diode Forward Voltage	V_{SD}	I_S=-2A,V_{GS}=0V		-0.8	-1.2	V
Reverse Recovery Time	t_{rr}	I_S=-2A,V_{GS}=0V dI_{SD}/dt=-100A/μs V_{DS}=-10V,Tj= 25 °C		17		nS
Reverse Recovery Charge	Q_{rr}			5		nC
Dynamic Characteristics[b]						
Input capacitance	C_{iss}	V_{GS}=0V,V_{DS}=-10V, Frequency = 1 MHz		1025		pF
Output capacitance	C_{oss}			137		pF
Reverse transfer capacitance	C_{rss}			113		pF
Turn-on Delay Time	$t_{d(on)}$	V_{DS}=-10V,V_{GS}=-4.5V R_G= 6Ω, I_D=-5.8A		6		nS
Turn-on Rise Time	t_r			17		nS
Turn-Off Delay Time	$t_{d(off)}$			23		nS
Turn-Off Fall Time	t_f			19		nS
Gate Charge Characteristics[b]						
Total Gate Charge	Q_g	V_{DS}=-10V,V_{GS}=-4.5V,I_D=-5.8A		10.6	16	nC
Gate-Source Charge	Q_{gs}			2.1		nC
Gate-Drain Charge	Q_{gd}			3.6		nC

PARAMETER CHARACTERISTIC CURVE

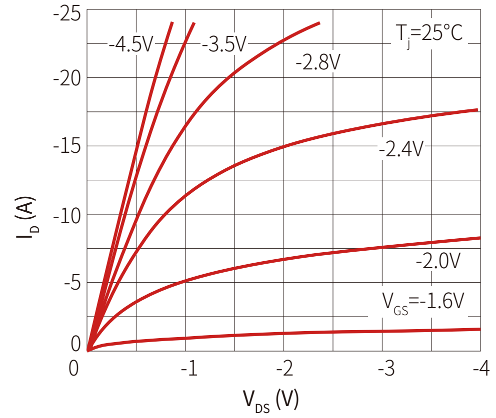


Figure 1: Output characteristics: drain current as a function of drain-source voltage; typical values

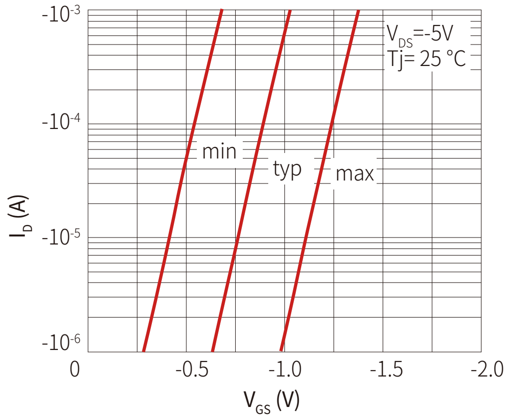


Figure 2: Sub-threshold drain current as a function of gate-source voltage

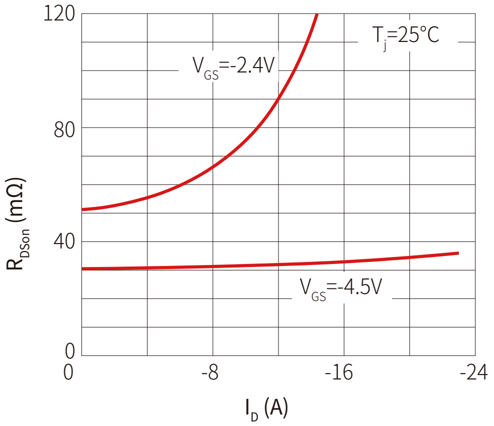


Figure 3: Drain-source on-state resistance as a function of drain current; typical values

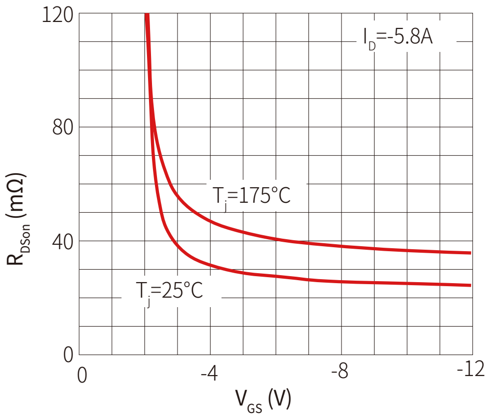


Figure 4: Drain-source on-state resistance as a function of gate-source voltage; typical values

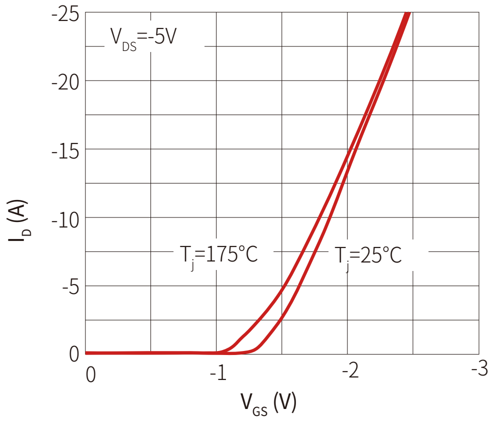


Figure 5: Transfer characteristics: drain current as a function of gate-source voltage; typical values

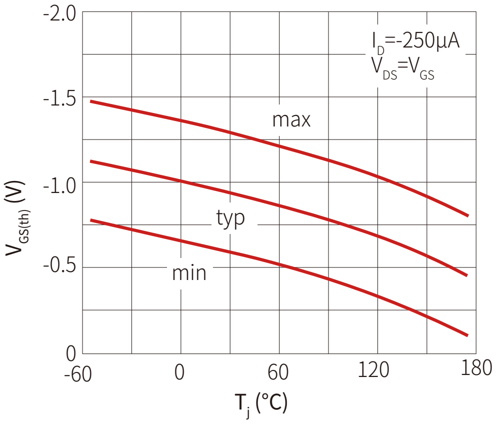


Figure 6: Gate-source threshold voltage as a function of junction temperature

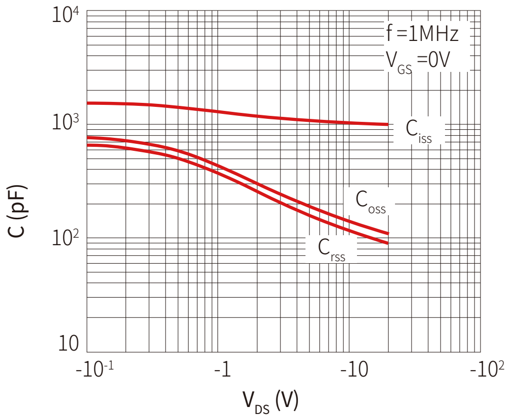


Figure 7: Input, output and reverse transfer capacitances as a function of drain-source voltage; typical values

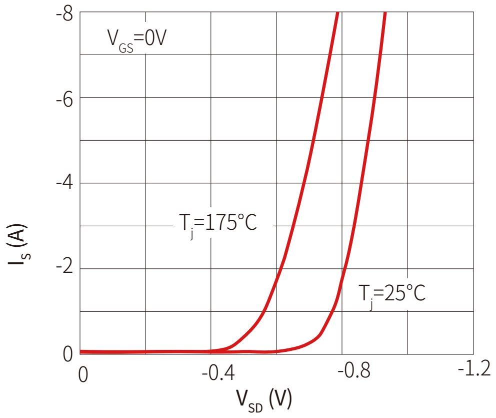


Figure 8: Source current as a function of source-drain voltage; typical values

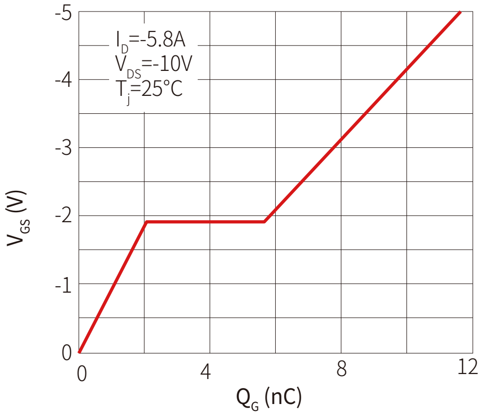


Figure 9: Gate-source voltage as a function of gate charge; typical values

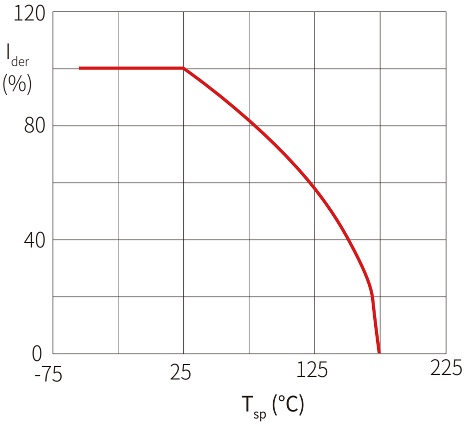


Figure 10: Normalized continuous drain current as a function of solder point temperature

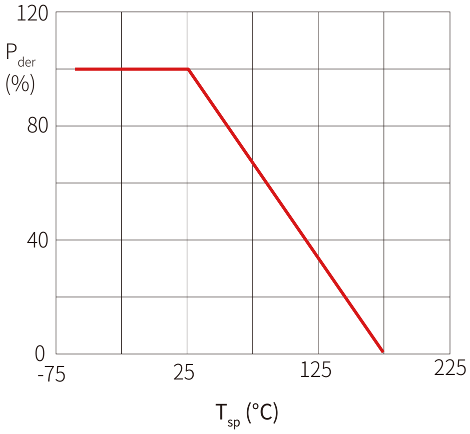


Figure 11: Normalized total power dissipation as a function of solder point temperature

Figure 12:Safe operating area; junction to ambient; continuous and peak drain currents as a function of drain source voltage

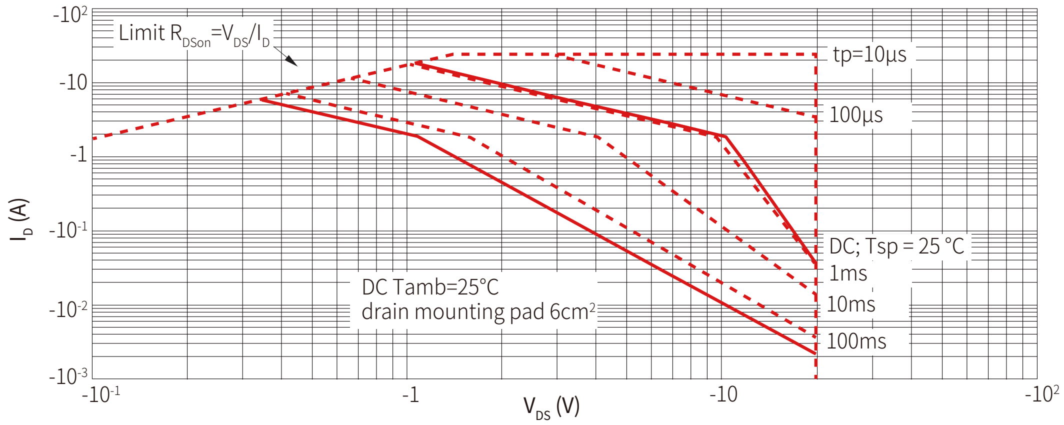
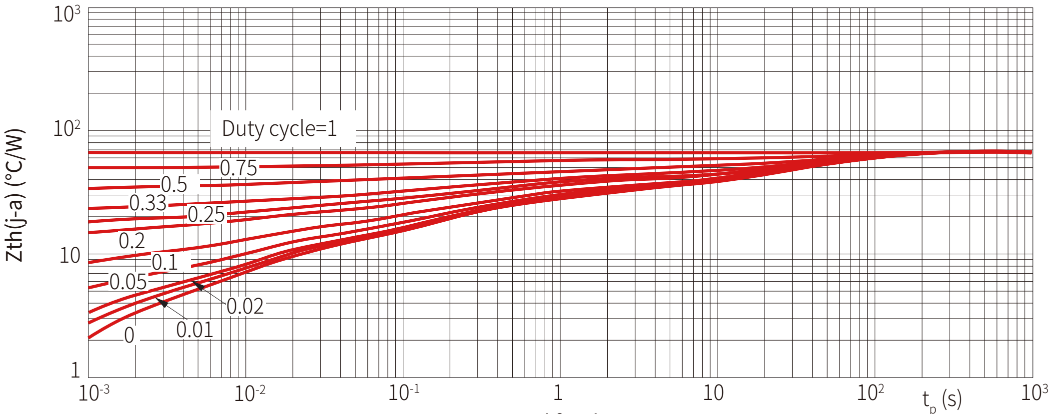
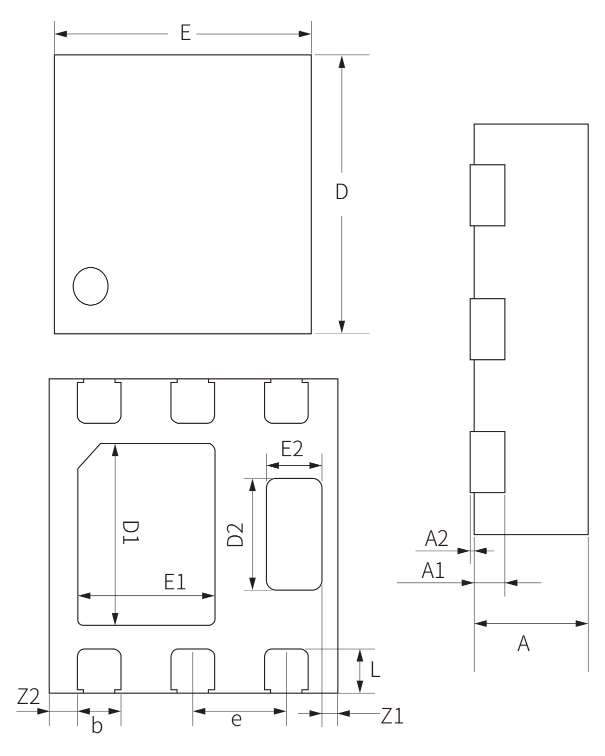


Figure 13:Transient thermal impedance from junction to ambient as a function of pulse duration; typical values



FR4 PCB, mounting pad for drain 6 cm²

DFN2020-6L PACKAGE INFORMATION



Ref.	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
D	1.95	2.00	2.05	0.077	0.079	0.081
E	1.95	2.00	2.05	0.077	0.079	0.081
D1	1.10	1.15	1.20	0.043	0.045	0.047
E1	0.90	0.95	1.00	0.035	0.037	0.039
D2	0.65	0.70	0.75	0.026	0.028	0.030
E2	0.33	0.38	0.43	0.013	0.015	0.017
L	0.23	0.275	0.33	0.009	0.011	0.013
b	0.25	0.30	0.35	0.010	0.012	0.014
e	0.65BSC			0.026BSC		
A	0.40	0.50	0.60	0.016	0.020	0.024
A1	0.150REF			0.006REF		
A2	0.00	-	0.05	0.00	-	0.002
Z1	0.06	0.11	0.16	0.002	0.004	0.006
Z2	0.15	0.20	0.25	0.006	0.008	0.010

ORDERING INFORMATION

Part Number	Component Package	QTY/Reel	Reel Size
SPM3415RQ	DFN2020-6L	3000PCS	7”

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