

FEATURES

$V_{DS} = -20V, I_D = -16A$

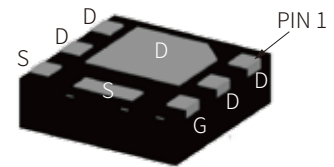
$R_{DS(ON)} (Typ.) = 16m\Omega @ V_{GS} = -2.5V$

$R_{DS(ON)} (Typ.) = 12m\Omega @ V_{GS} = -4.5V$

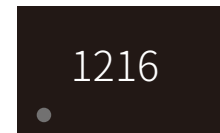
High power and current handling capability

Lead free product is acquired

Surface mount package



DFN2020-6L

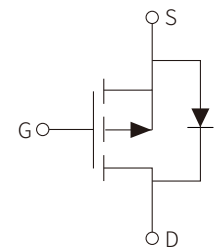


Marking

APPLICATION

PWM applications

Load switch



Schematic Symbol

APPROVALS

RoHS Compliance with 2011/65/EU

HF Compliance with IEC61249-2-21:2003

ABSOLUTE MAXIMUM RATINGS($T_a = 25^\circ C$)

Parameter		Symbol	Value	Unit
Drain-source voltage		V_{DS}	-20	V
Gate-source voltage		V_{GS}	± 12	V
Drain current-continuous	$T_c = 25^\circ C$	I_D	-16 ^a	A
	$T_c = 70^\circ C$		-16 ^a	A
	$T_A = 25^\circ C$		-16 ^{a,b,c}	A
	$T_A = 70^\circ C$		-12 ^{b,c}	A
Drain-source Diode forward current	$T_c = 25^\circ C$	I_S	-16 ^a	A
	$T_A = 25^\circ C$		-2.9 ^{b,c}	A
Maximum power dissipation	$T_c = 25^\circ C$	P_D	18	W
	$T_c = 70^\circ C$		12	W
	$T_A = 25^\circ C$		3.5 ^{b,c}	W
	$T_A = 70^\circ C$		2.2 ^{b,c}	W
Operating junction Temperature range		T_J	-55 to 175	$^\circ C$
Maximum junction-to-ambient ^{b,d} $t \leq 5s$		R_{thJA}	36	$^\circ C/W$
Maximum junction-to-case (drain) Steady state		R_{thJC}	6.5	$^\circ C/W$

a. Package limited; b. Surface mounted on 1" x 1" FR4 board
c. $t = 5s$; d. Maximum under steady state conditions is $80^\circ C/W$

ELECTRICAL CHARACTERISTICS (T_A=25°C)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
OFF Characteristics						
Drain-source breakdown voltage	BV _{DSS}	V _{GS} =0V,I _D =-250μA	-20			V
Gate-body leakage	I _{GSS}	V _{GS} =±12V,V _{DS} =0V			±100	nA
Zero gate voltage drain current	I _{DSS}	V _{DS} =-12V,V _{GS} =0V			-1	μA
ON Characteristics						
Gate threshold voltage	V _{GS(th)}	V _{DS} =V _{GS} ,I _D =-250μA	-0.4	-0.7	-1.0	V
Drain-source on-state resistance	R _{DS(on)}	V _{GS} =-4.5V,I _D =-10A		12	15	mΩ
		V _{GS} =-2.5V,I _D =-5A		16	20	mΩ
Forward transconductance	g _{fs}	V _{DS} =-6V,I _D =-7A		32		S
Dynamic Characteristics						
Input capacitance	C _{iss}	V _{GS} =0V,V _{DS} =-10V, f=1.0MHz		1300		pF
Output capacitance	C _{oss}			380		pF
Reverse transfer capacitance	C _{rss}			280		pF
Switching Characteristics						
Total Gate Charge	Q _g	V _{DS} =-6V,V _{GS} =-4.5V,I _D =-9A		13		nC
Gate-Source Charge	Q _{gs}			3		nC
Gate-Drain Charge	Q _{gd}			5		nC
Turn-on Delay Time	t _{d(on)}	V _{DD} =-10V,I _D =-5A V _{GEN} =-4.5V,R _L =1.2ohm R _{GEN} =1ohm		11		ns
Turn-on Rise Time	t _r			35		ns
Turn-Off Delay Time	t _{d(off)}			30		ns
Turn-Off Fall Time	t _f			10		ns
Drain-source Diode Characteristics						
Diode forward voltage	V _{SD}	V _{GS} =0V,I _S =-1.25A		-0.7	-1.2	V

PARAMETER CHARACTERISTIC CURVE

Figure 1: On-Region Characteristics

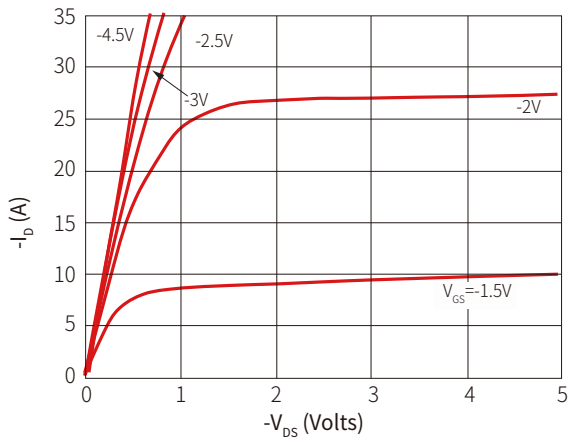


Figure 2: Transfer Characteristics

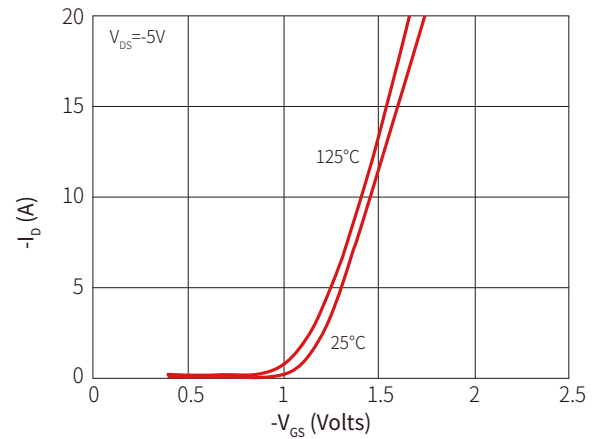


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

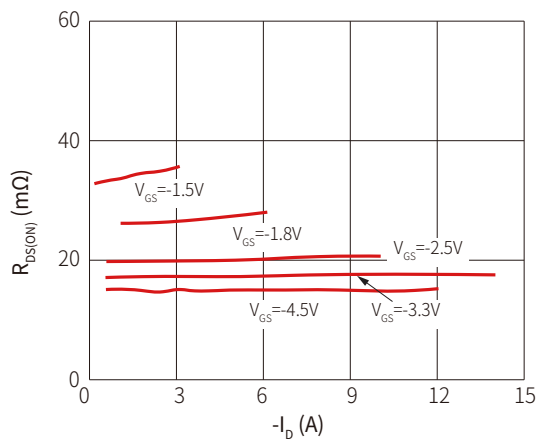


Figure 4: On-Resistance vs. Junction Temperature

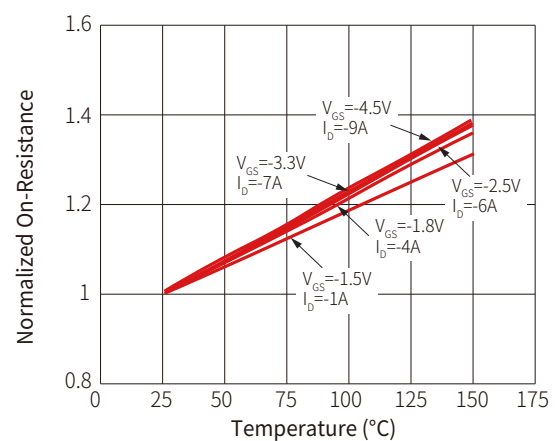


Figure 5: On-Resistance vs. Gate-Source Voltage

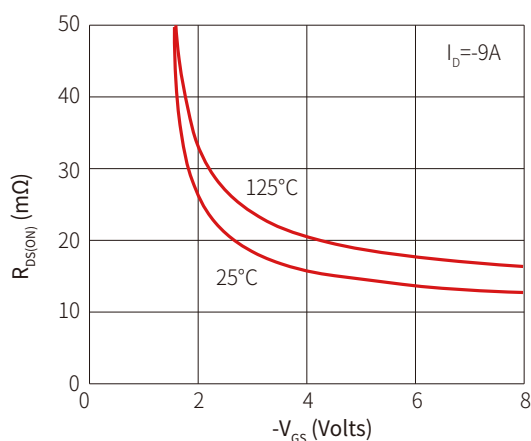


Figure 6: Body-Diode Characteristics

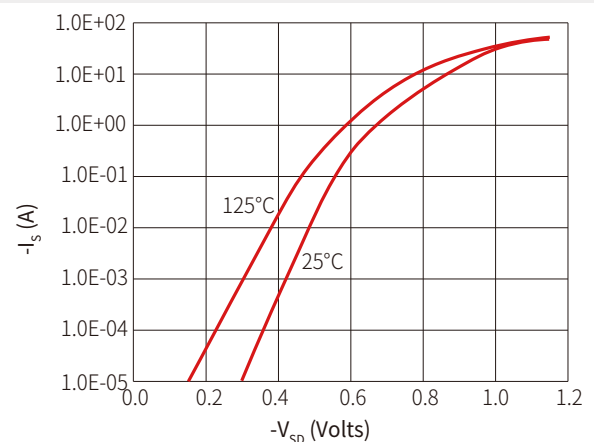


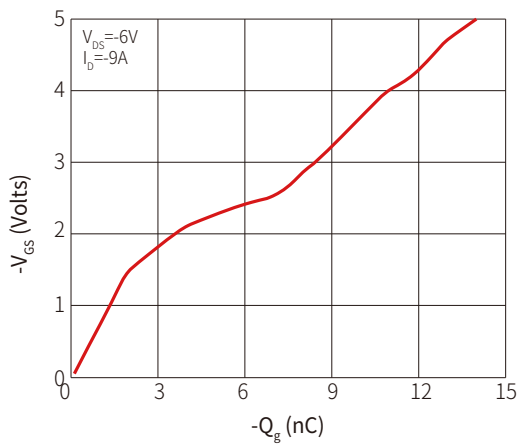
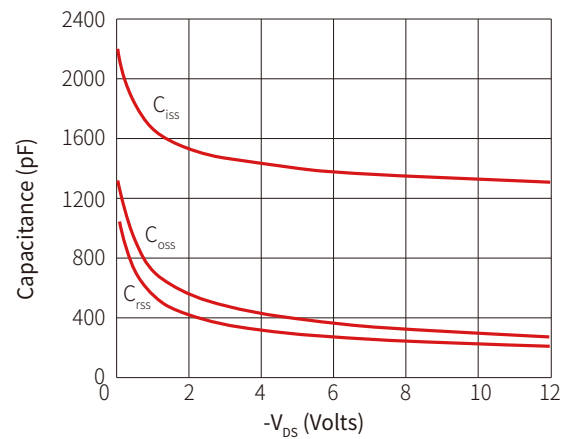
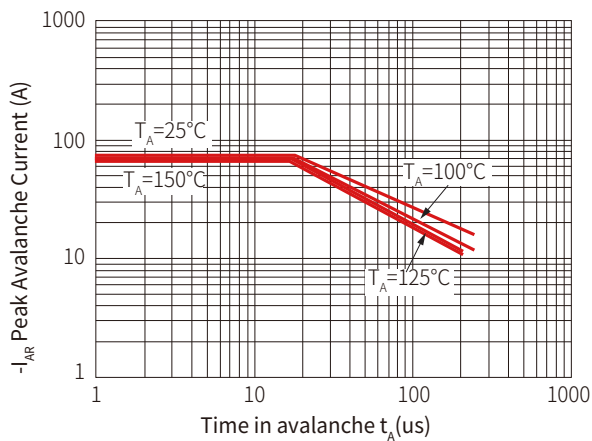
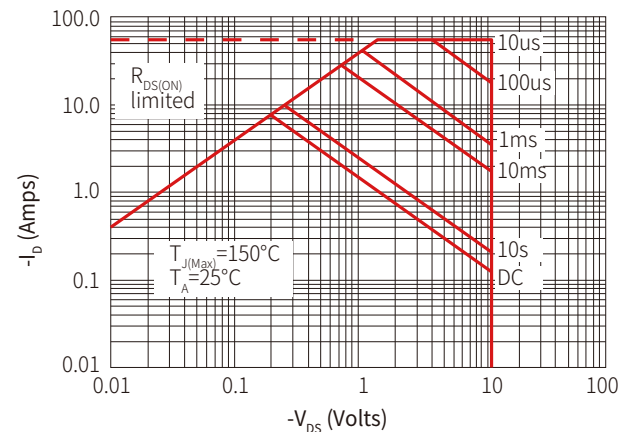
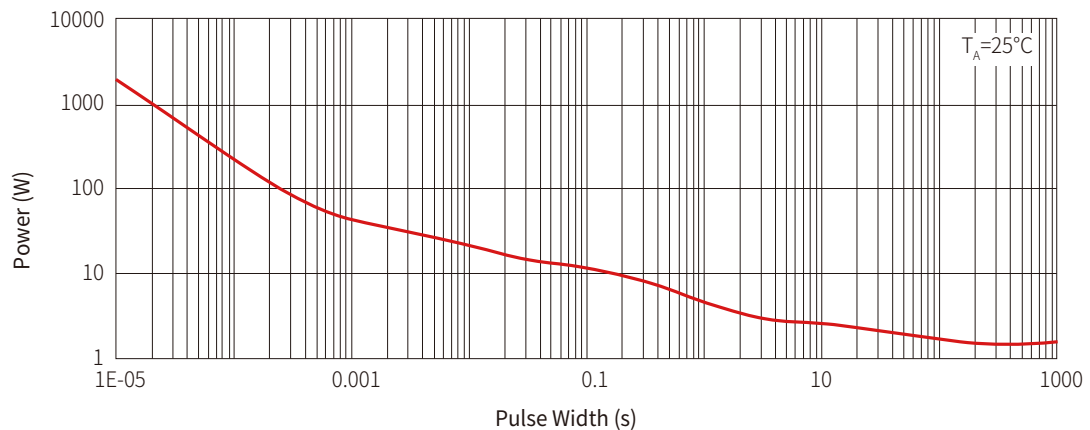
Figure 7: Gate-Charge Characteristics

Figure 8: Capacitance Characteristics

Figure 9: Single Pulse Avalanche Capability

Figure 10: Maximum Forward Biased Safe Operating Area

Figure 11: Single Pulse Power Rating Junction-to-Ambient


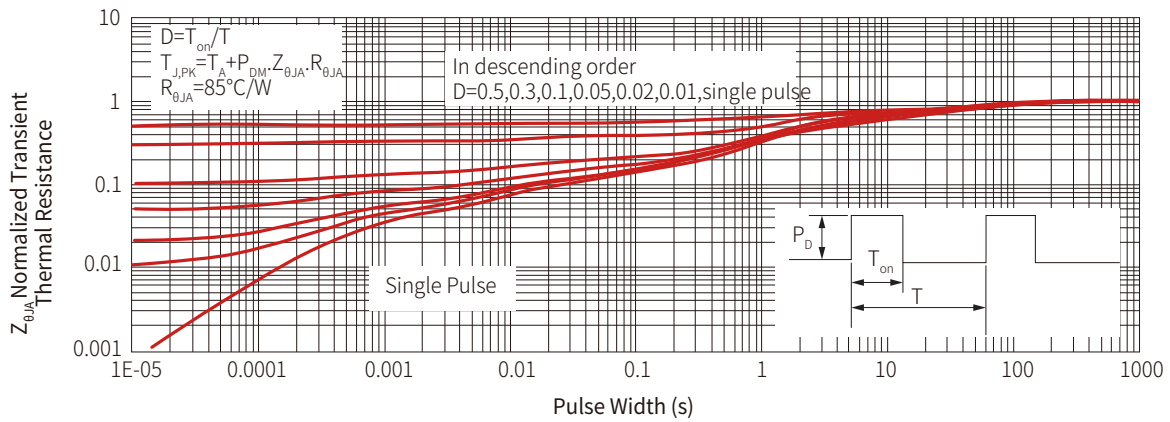
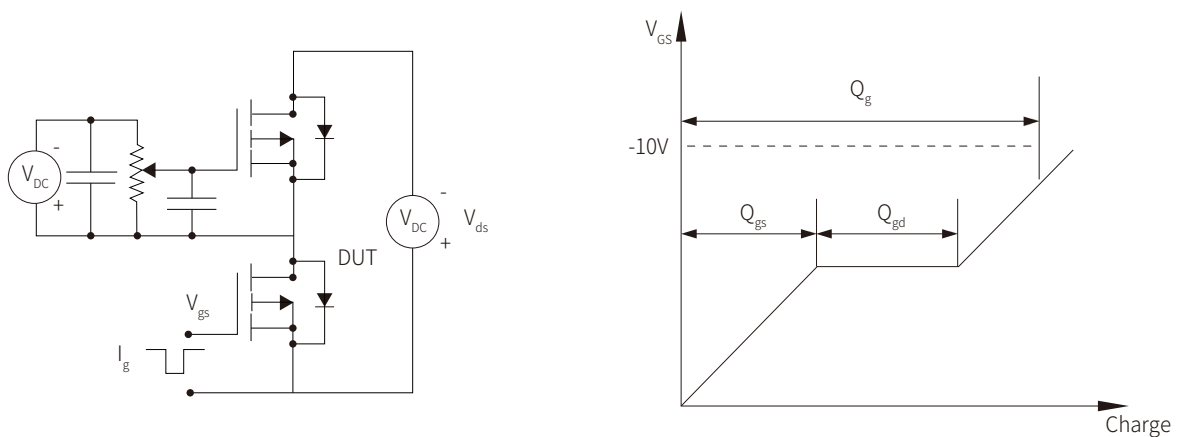
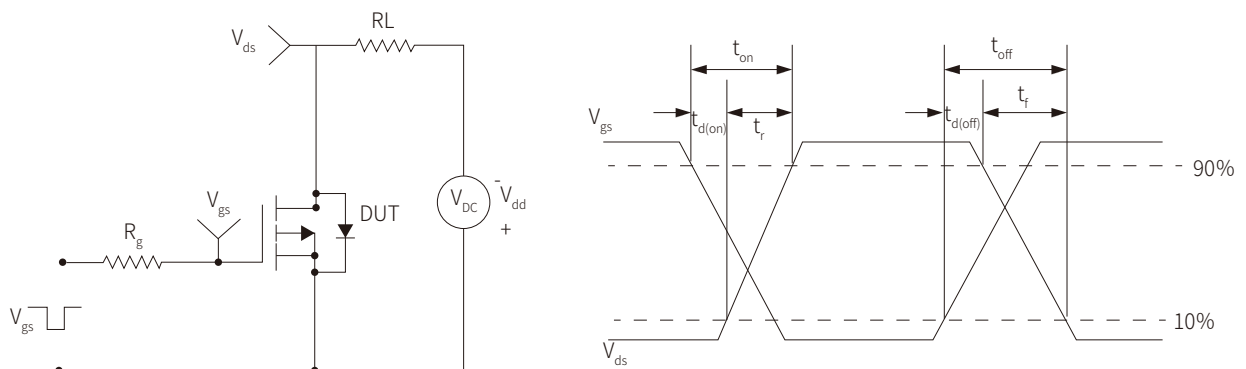
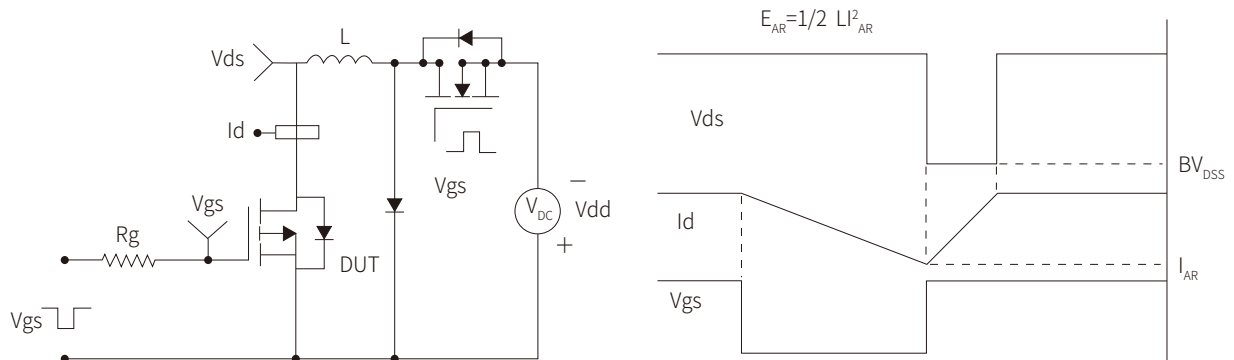
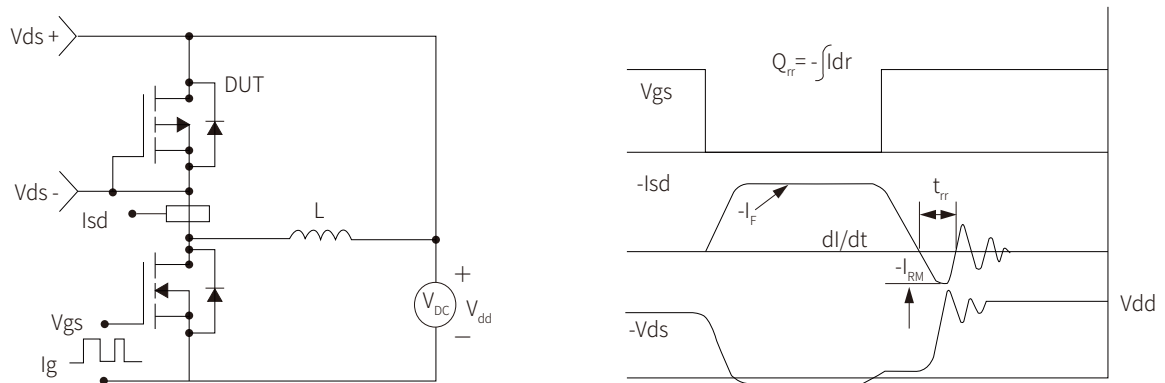
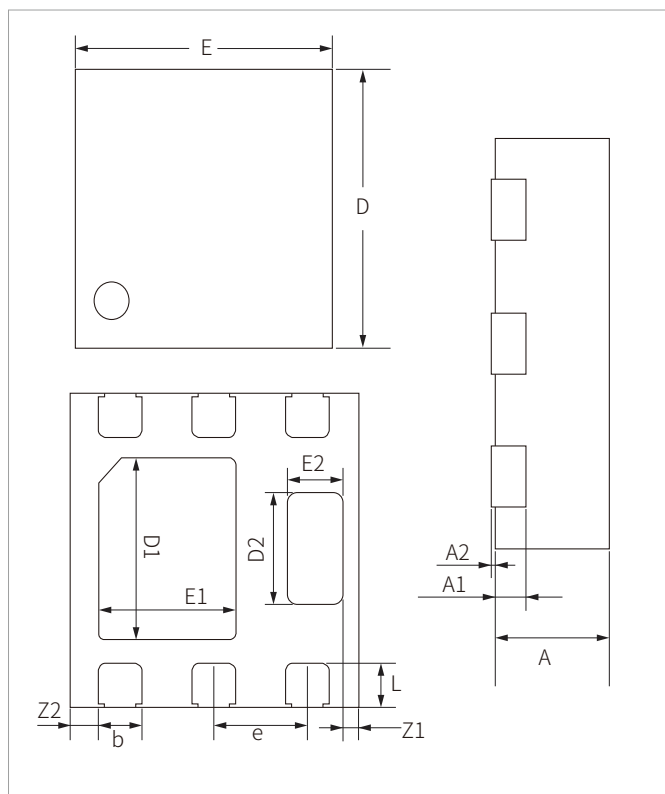
Figure 12: Normalized Maximum Transient Thermal Impedance

Fig 13: Gate Charge Test Circuit & Waveforms

Figure 14: Resistive Switching Test Circuit & Waveforms


Fig 15: Unclamped Inductive Switching (UIS) Test Circuit & Waveforms

Figure 16: Diode Recovery Test Circuit & Waveforms


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
SPM1216	DFN2020-6L	3000PCS	7"

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By QR Code

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