

1. Description

The DMP6023LFG-13(ES) uses advanced trench technology MOSFETs to provide excellent $R_{DS(ON)}$ and low gate charge. Device is suitable for use in DC-DC conversion, power switch and charging circuit. Standard Product DMP6023LFG-13(ES) Pb-free.

2. Features

- -60V $R_{DS(ON)}=24m\Omega(Typ.) @V_{GS}=-10V$
 $R_{DS(ON)}=30m\Omega(Typ.) @V_{GS}=-4.5V$
- Fast Switching
- High density cell design for low $R_{DS(on)}$
- Material: Halogen free
- Reliable and rugged
- Avalanche Rated
- Low leakage current

3. Applications

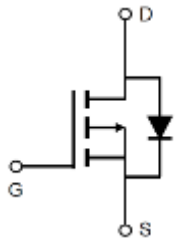
- PWM applications
- Load switch
- Power management in portable/desktop PCs
- DC/DC conversion

100% UIS TESTED

4. Ordering Information

Part Number	Package	Marking	Material	Packing	Quantity per reel	Flammability Rating	Reel Size
DMP6023LFG-13(ES)	PDFN3*3-8L	.PH06R30/LOT	Halogen free	Tape & Reel	5,000 PCS	UL 94V-0	13 inches

5. Pin Configuration and Functions

Pin	Function	Outline	Circuit Diagram
4	Gate	Note b 	
1/2/3	Source		
5/6/7/8	Drain		

6. Specification

Absolute Maximum Rating & Thermal Characteristics

Ratings at 25 °C ambient temperature unless otherwise specified.

Parameter		Symbol	Limited	Unit
Drain-Source Voltage		BV_{DSS}	-60	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current	$T_C=25^{\circ}C$	I_D	-30	A
	$T_C=100^{\circ}C$		-25.5	
Maximum Power Dissipation		P_D	79	W
Pulsed Drain Current		I_{DM}	-120	A
Single Pulse Avalanche Energy ^a		E_{AS}	196	mJ
Operating Junction Temperature		T_J	-55 to +150	°C
Storage Temperature Range		T_{stg}	-55 to +150	°C

Thermal resistance ratings

Parameter	Symbol	Typical	Maximum	Unit
Junction-to-Case Thermal Resistance	$R_{\theta JC}$		1.9	°C/W

Notes:

a: The EAS data shows Max. rating The test condition is $V_{DD} = -40V$, $V_{GS} = -10V$, $R_g = 25\Omega$, $L = 0.5mH$, $T_J = 25^{\circ}C$.

b: This diagram is only an electrical schematic, and the actual pin size is based on POD.

Electrical Characteristics

At TA = 25°C unless otherwise specified

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
OFF CHARACTERISTICS						
Drain-to-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =-250uA	-60			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{GS} =0V, V _{DS} =-60V			-1	uA
Gate-to-source Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V			±100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	V _{GS(TH)}	V _{GS} =V _{DS} , I _D =-250uA	-1	-1.8	-2.5	V
Drain-to-source On-resistance	R _{DS(on)}	V _{GS} =-10V, I _D =-15A		24	30	mΩ
		V _{GS} =-4.5V, I _D =-10A		30	40	
Forward Transconductance	g _{FS}	V _{DS} =-5V, I _D =-15A		35		S
CHARGES, CAPACITANCES AND GATE RESISTANCE						
Input Capacitance	C _{ISS}	V _{GS} =0V, V _{DS} =-25V f=1MHz		3950		pF
Output Capacitance	C _{OSS}			172		
Reverse Transfer Capacitance	C _{RSS}			145		
Total Gate Charge	Q _{G(TOT)}	V _{GS} =-10V, V _{DS} =-30V I _D =-20A		68		nC
Gate-to-Source Charge	Q _{GS}			10.5		
Gate-to-Drain Charge	Q _{GD}			13		
SWITCHING CHARACTERISTICS						
Turn-On Delay Time	t _{d(ON)}	V _{GS} =-10V, V _{DS} =-30V I _D =-20A, R _G =3Ω		12.2		ns
Rise Time	t _r			10		
Turn-Off Delay Time	t _{d(OFF)}			64		
Fall Time	t _f			14		
BODY DIODE CHARACTERISTICS						
Forward Voltage	V _{SD}	V _{GS} =0V, I _{SD} =-15A			-1.2	V

7. Typical Characteristic

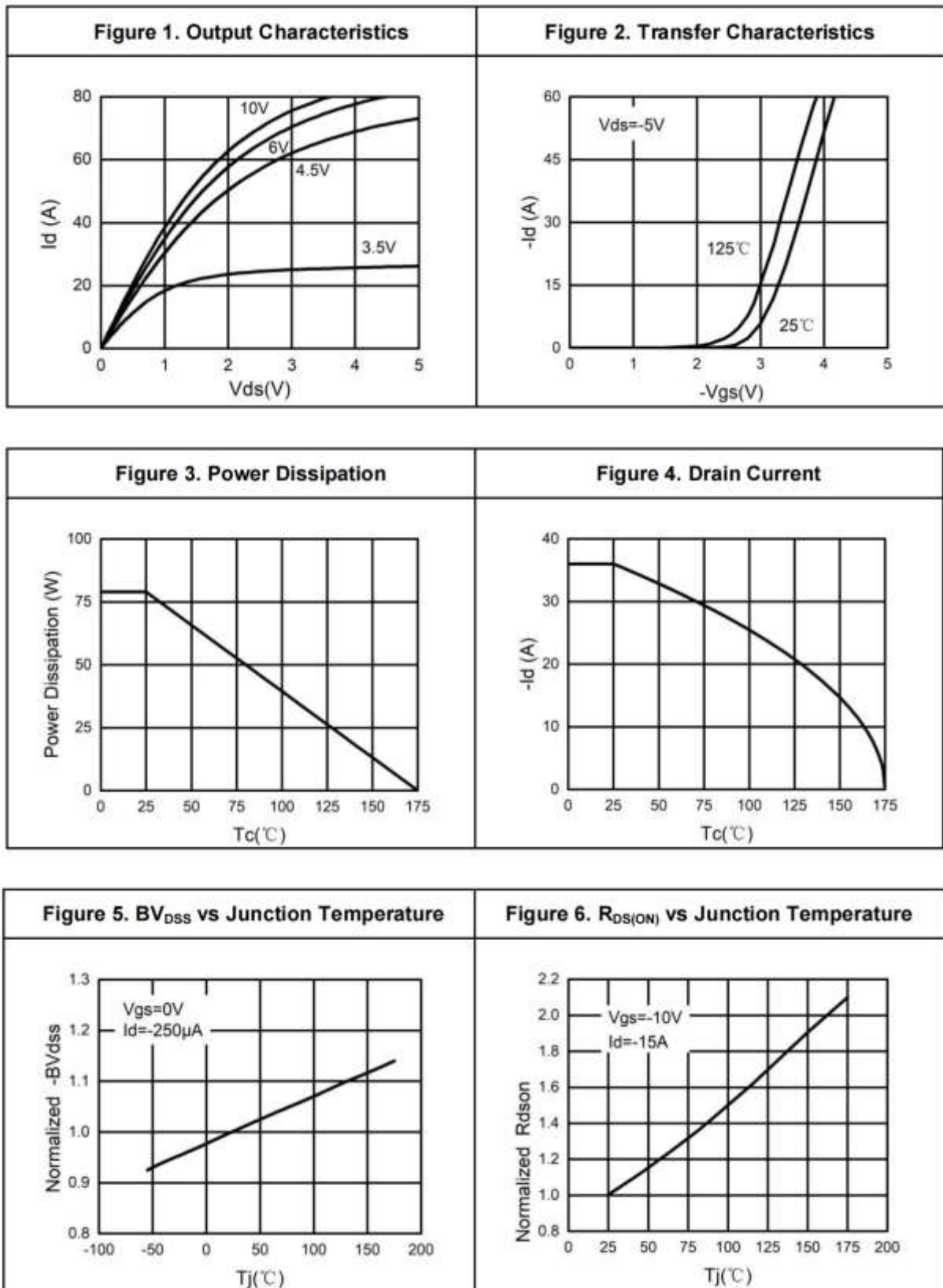


Figure 7. Gate Charge Waveforms

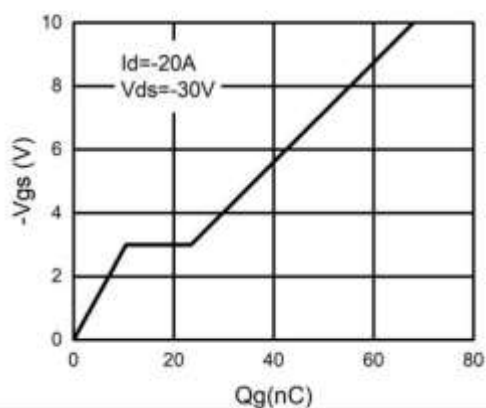


Figure 8. Capacitance

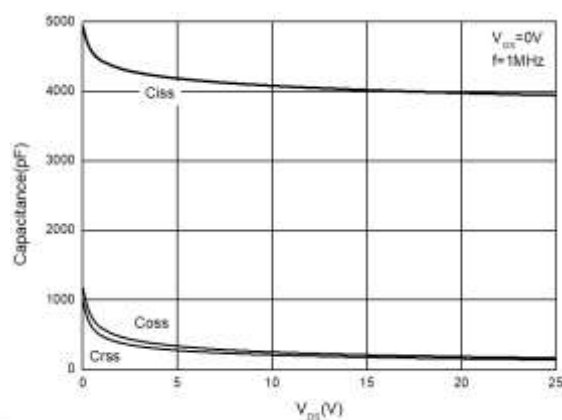


Figure 9. Body-Diode Characteristics

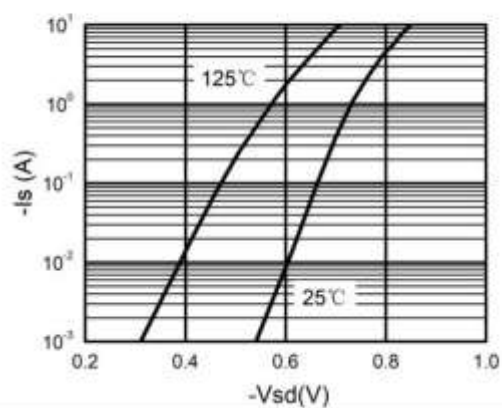
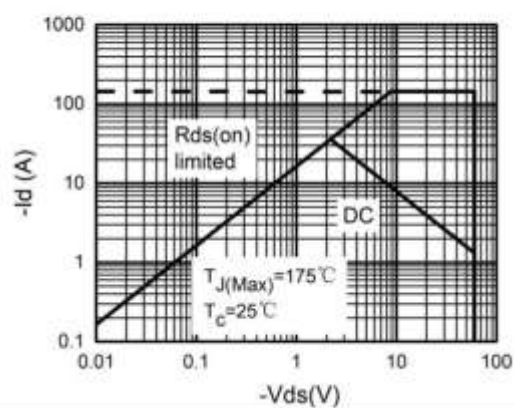
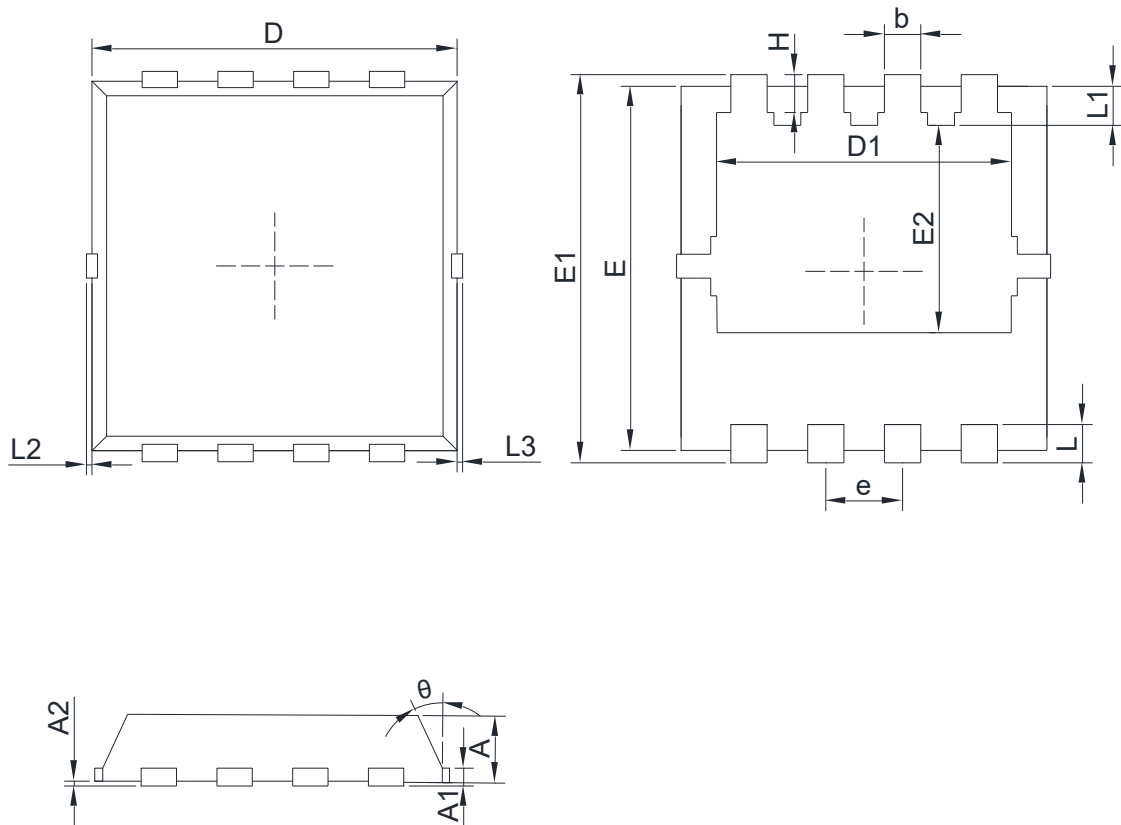


Figure 10. Maximum Safe Operating Area



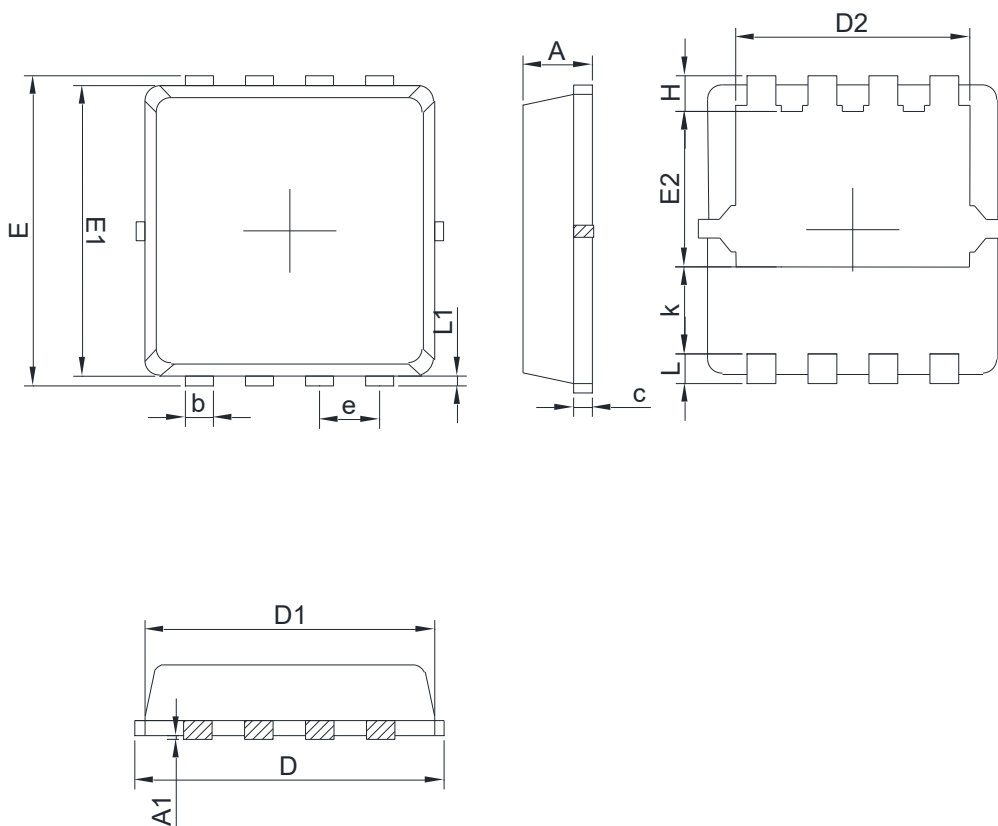
8. Dimension (PDFN3*3-8L)

POD A(X)



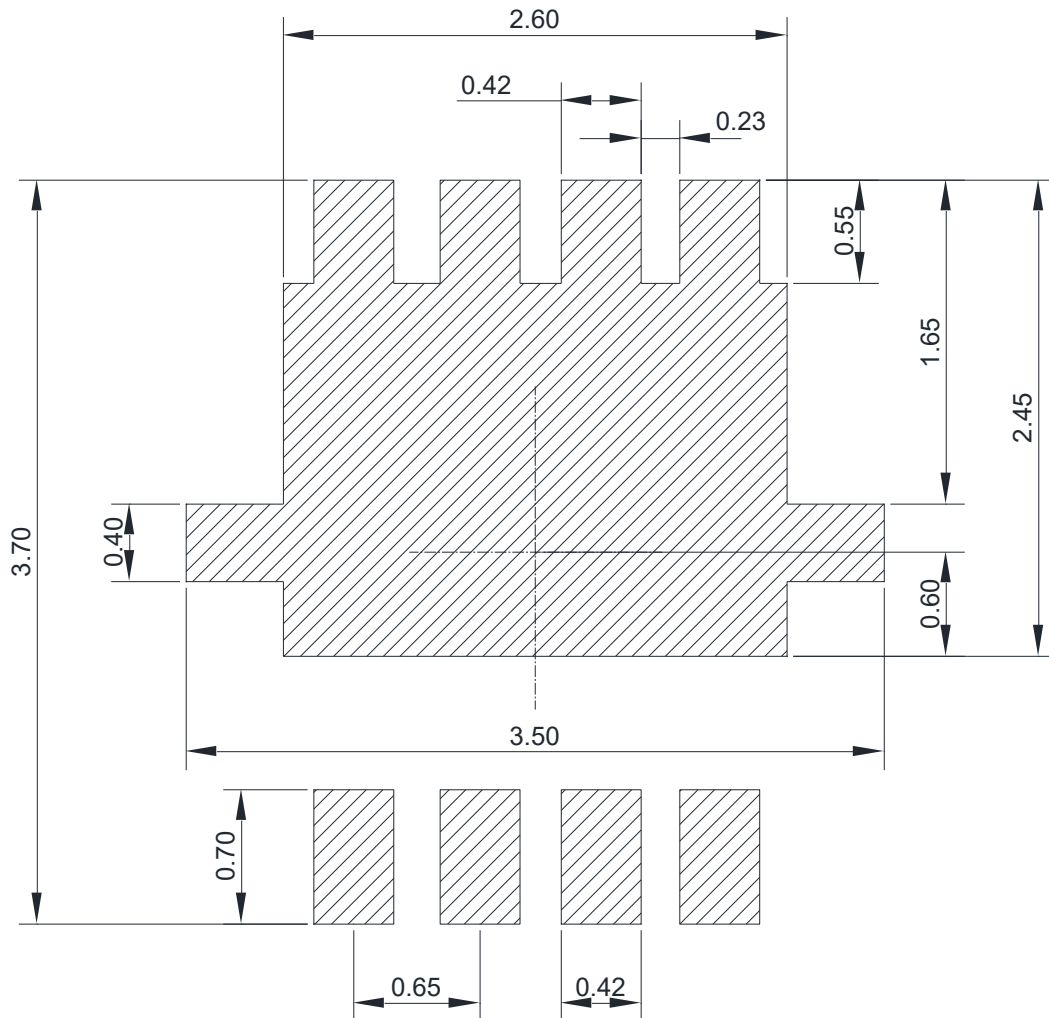
COMMON DIMENSIONS CUNITS MEASURE=MILLIMETER							
SYMBOL	MIN	TYP	MAX	SYMBOL	MIN	TYP	MAX
A	0.700	0.800	0.900	L	0.300	0.400	0.500
A1	0.152 REF			L1	0.180	0.330	0.480
A2	0~0.05			L2	0~0.100		
D	3.000	3.100	3.200	L3	0~0.100		
D1	2.300	2.450	2.600	H	0.315	0.415	0.515
E	2.900	3.000	3.100	b	0.200	0.300	0.400
E1	3.150	3.300	3.450	e	0.550	0.650	0.750
E2	1.535	1.735	1.935	θ	8°	10°	12°

POD B(Q)



Symbol	Dimensions in Millimeters			Symbol	Dimensions in Millimeters		
	Min.	NOM.	Max.		Min.	NOM.	Max.
A	0.65	0.75	0.85	H	0.385	0.485	0.585
A1			0.05	k	0.80		
b	0.20	0.30	0.40	L	0.30	0.40	0.50
c	0.10	0.15	0.25	e	0.65BCS		
D	3.05	3.20	3.35	L1	0.025	0.125	0.225
D1	3.05	3.15	3.25	D2	2.30	2.45	2.60
E	3.25	3.35	3.45	E2	1.36	1.51	1.66
E1	3.00	3.10	3.20				

9. Recommended Soldering Footprint



DIMENSIONS: MILLIMETERS

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