

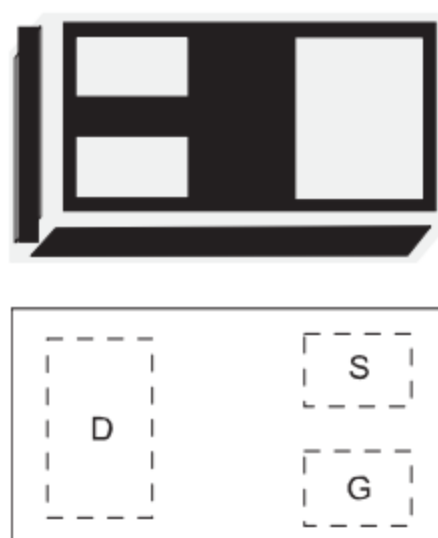
Features

- Low on-resistance
- High-speed switching
- Drive circuits can be simple
- Parallel use is easy
- ESD protected gate up to 2KV HBM

Application

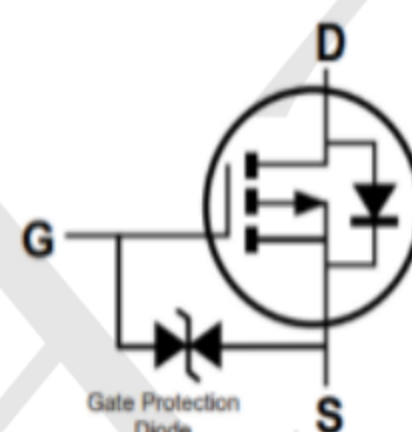
- Load/Power Switching
- Interfacing Switching
- Battery Management for Ultra Small Portable Electronics
- Logic Level Shift

Package and Pin Configuration



DFN1006-3L

Circuit diagram



Absolute Maximum Ratings (T_A=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-to-Source Voltage	V _{DSS}	-50	V
Gate-to-Source Voltage	V _{GSS}	±20	V
Continuous Drain Current	I _D	-130	mA
Pulsed Drain Current *4	I _{DM}	-520	mA

Thermal Characteristics

Parameter	Symbol	Value	Unit
Power Dissipation *1	P _D	0.15	W
Thermal Resistance Junction-to-Air *1	R _{θJA}	834	°C/W
Thermal Resistance Junction-to-Lead *1	R _{θJL}	500	°C/W
Thermal Resistance Junction-to-Case *1	R _{θJC}	421	°C/W
Operating Junction Temperature Range	T _J	-55 ~ +150	°C
Storage Temperature Range	T _{STG}	-55 ~ +150	°C

Electrical Characteristics ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
V _{DSS}	Drain-Source Breakdown Voltage	V _{GS} = 0V, I _D = -250μA	-50	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = -50V, V _{GS} = 0V	-	-	-1	μA
I _{GSS}	Gate-Body Leakage Current	V _{GS} = ±20V, V _{DS} = 0V	-	-	±10	μA
On Characteristics ^{*2}						
R _{DS(ON)}	Static Drain-Source On-resistance	V _{GS} = -5V, I _D = -0.1A	-	2.4	8	Ω
		V _{GS} = -10V, I _D = -0.13A	-	2.0	6	
V _{GS(TH)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D = -250μA	-1	-1.5	-2	V
Dynamic Characteristics ^{*3}						
C _{ISS}	Input Capacitance	V _{GS} = 0V	-	53	-	pF
C _{OSS}	Output Capacitance	V _{DS} = -20V	-	11	-	
C _{RSS}	Reverse Transfer Capacitance	f = 1.0MHz	-	5	-	
R _G	Gate Resistance	f = 1.0MHz, V _{GS} = 0V	-	721	-	Ω
Switching Characteristics						
t _{d(ON)}	Turn-on Delay Time	V _{DS} = -15V R _L = -50Ω I _D = -2.5A	-	2.5	-	ns
t _r	Turn-on Rise Time		-	1	-	
t _{d(OFF)}	Turn-Off Delay Time		-	16	-	
t _f	Turn-Off Fall Time		-	8	-	
Q _G	Total Gate-Charge	V _{DS} = -25V	-	2.5	-	nC
Q _{GS}	Gate to Source Charge	V _{GS} = -4.5V	-	0.83	-	
Q _{GD}	Gate to Drain (Miller) Charge	I _D = -0.2A	-	0.82	-	
Source-Drain Diode Characteristics						
V _{SD}	Diode Forward Voltage ^{*2}	I _S = -0.26A, V _{GS} = 0 V	-	-0.9	-1.4	V
I _S	Continuous Source Current	T _C = 25°C	-	-	-0.13	A
I _{SM}	Pulsed Source Current	T _C = 25°C	-	-	-0.52	A

Typical Electrical and Thermal Characteristics

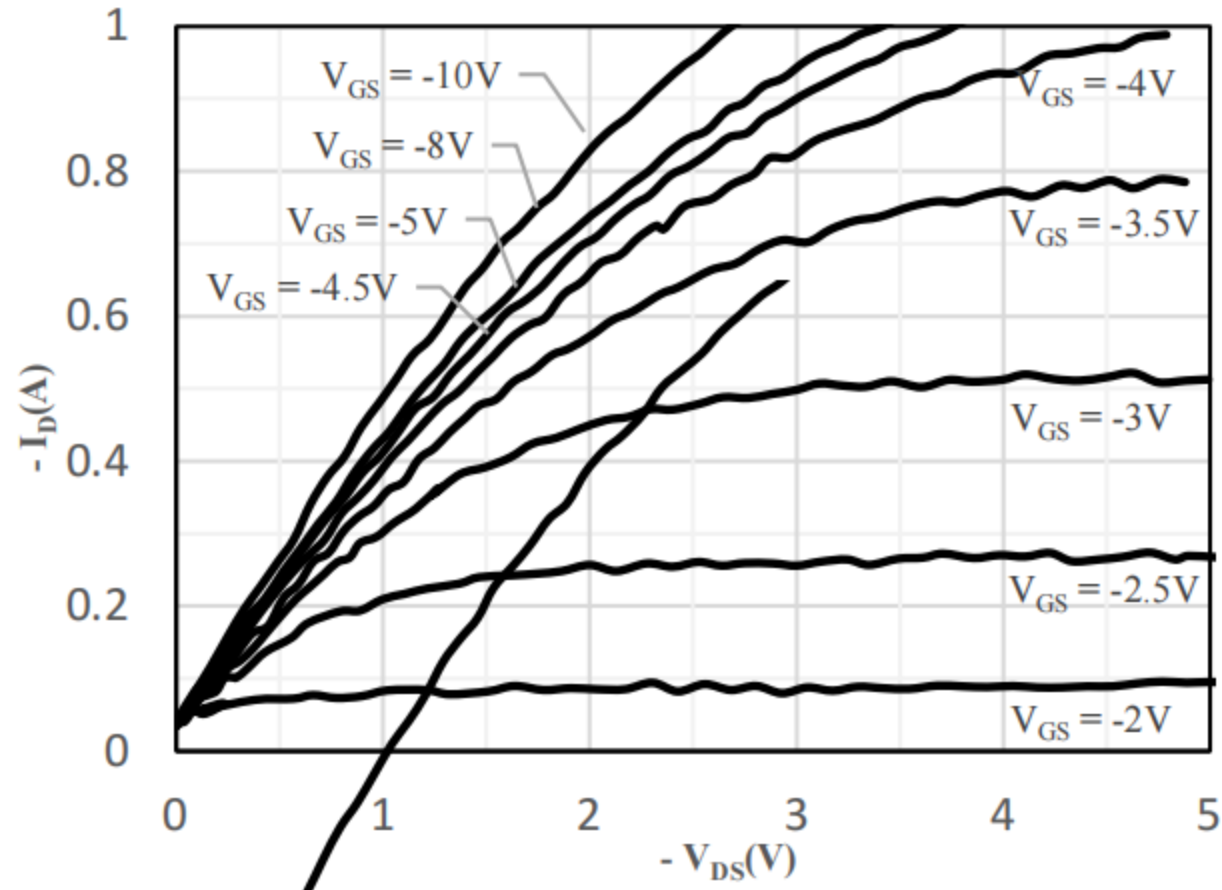


Fig 1 Output Characteristics

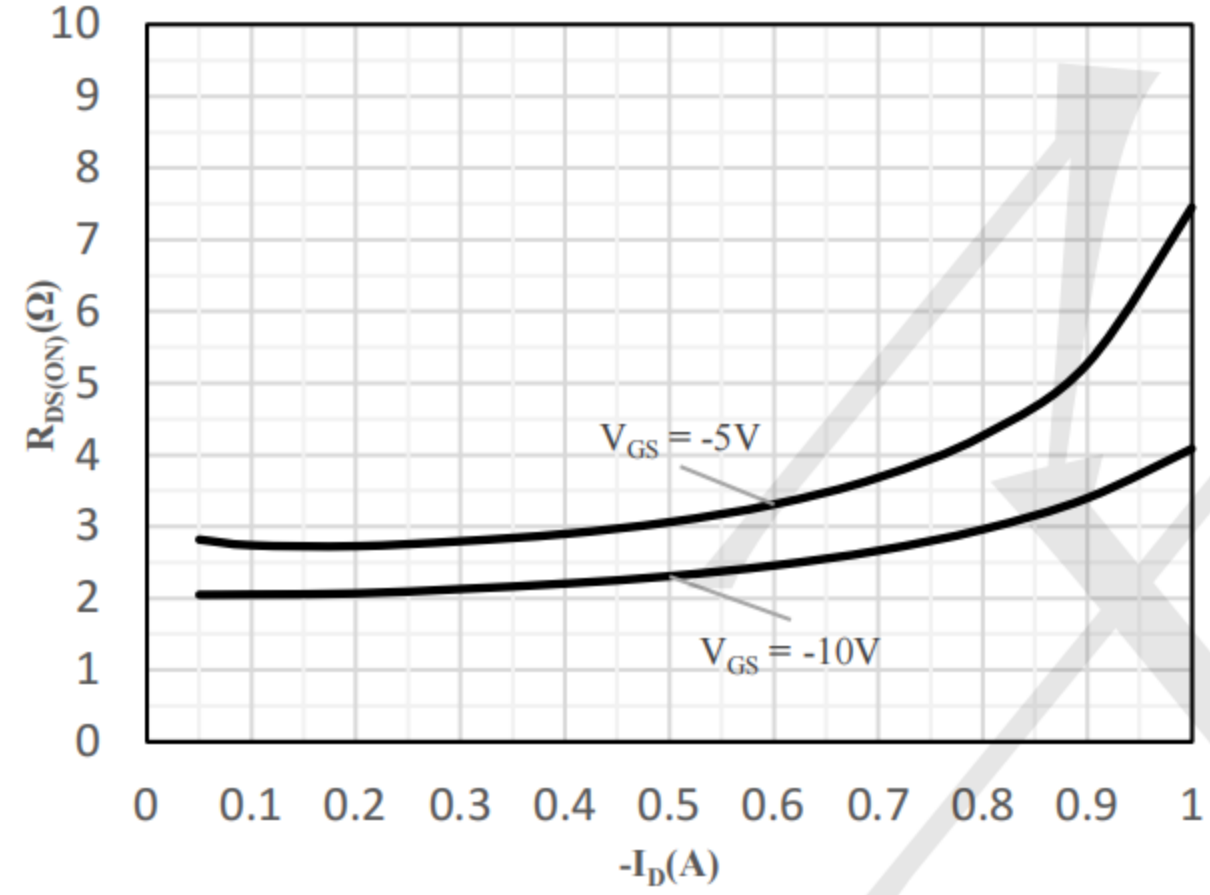


**Fig 2 On-Resistance vs. Drain Current
and Gate Voltage**

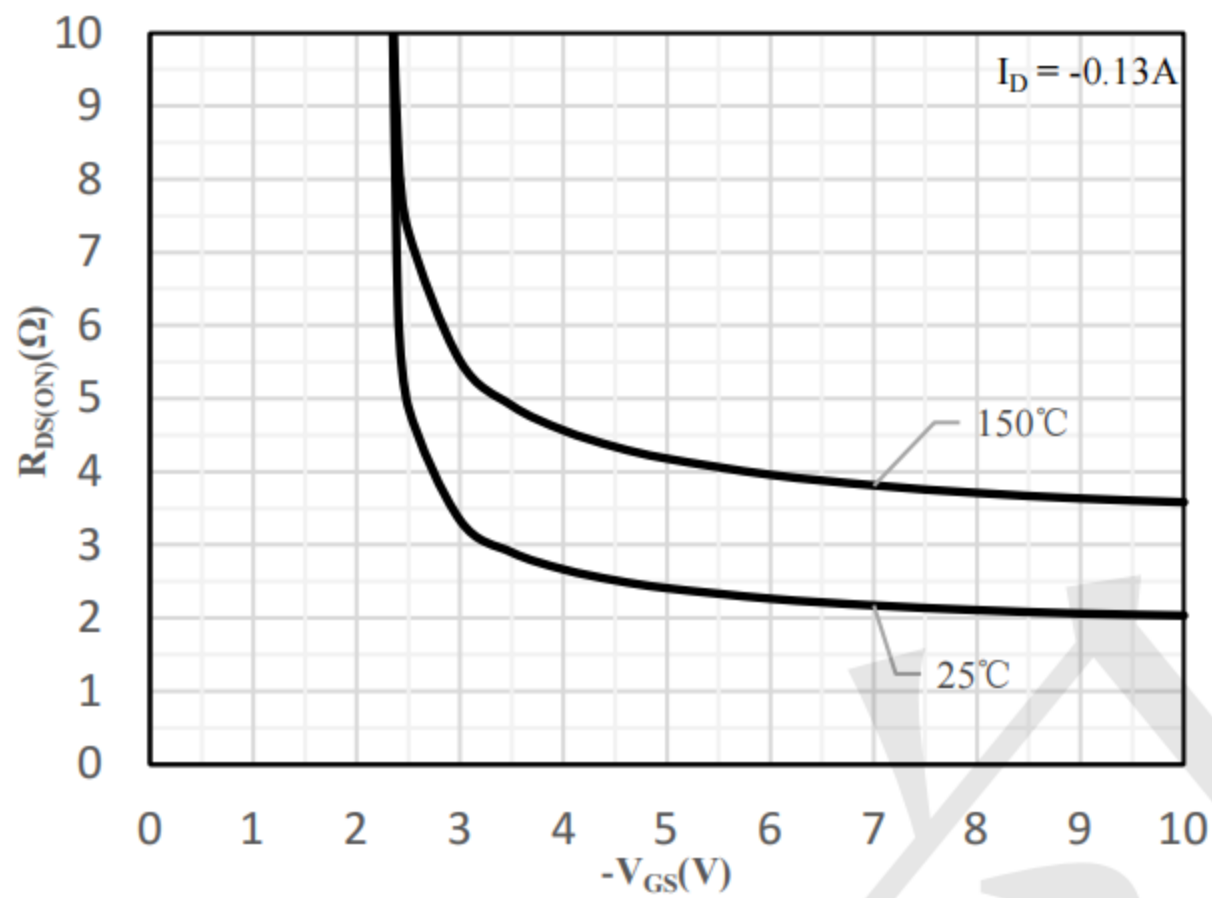


Fig 3 On-Resistance vs. Gate-Source Voltage

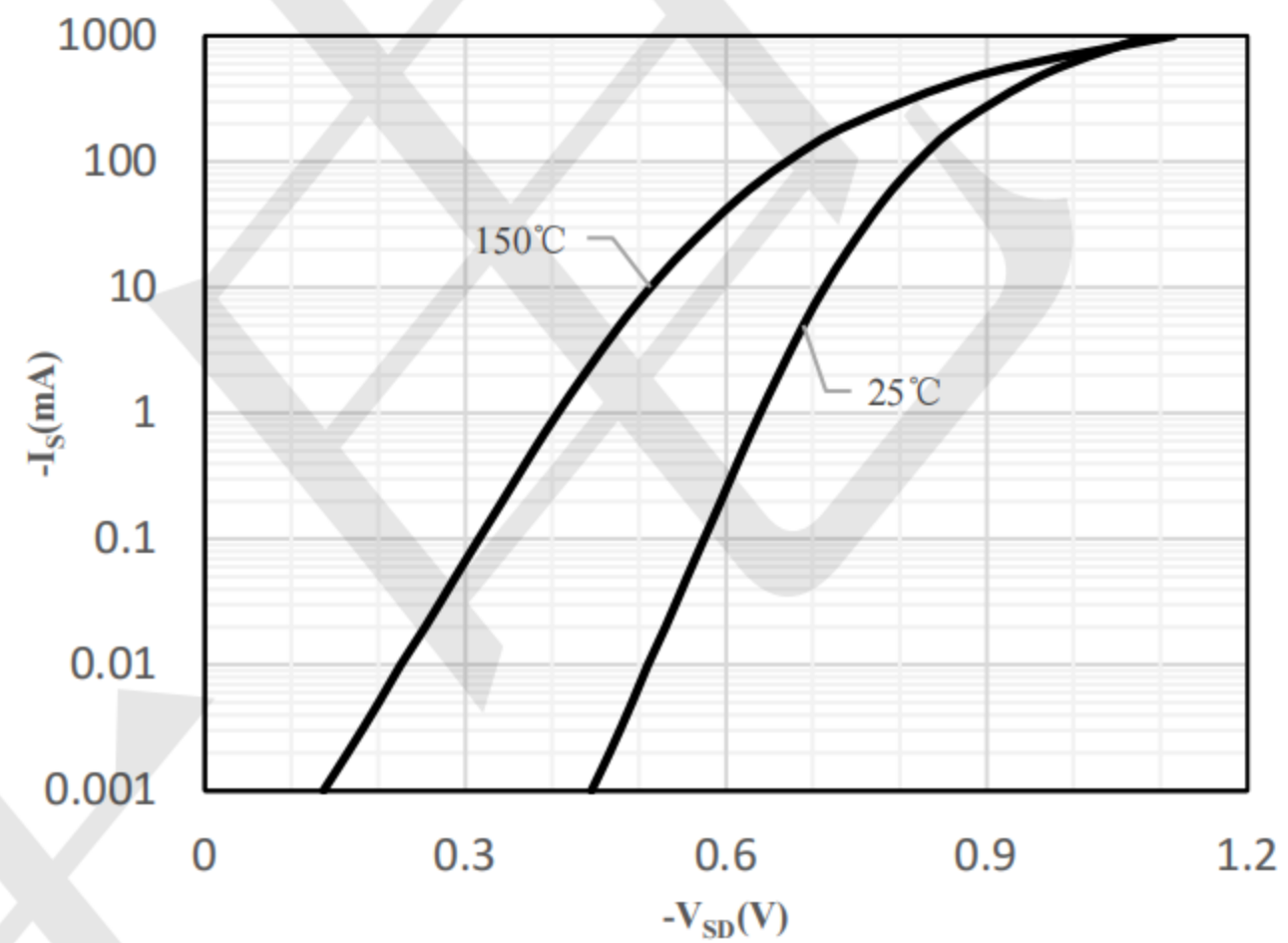


Fig 4 Body-Diode Characteristics

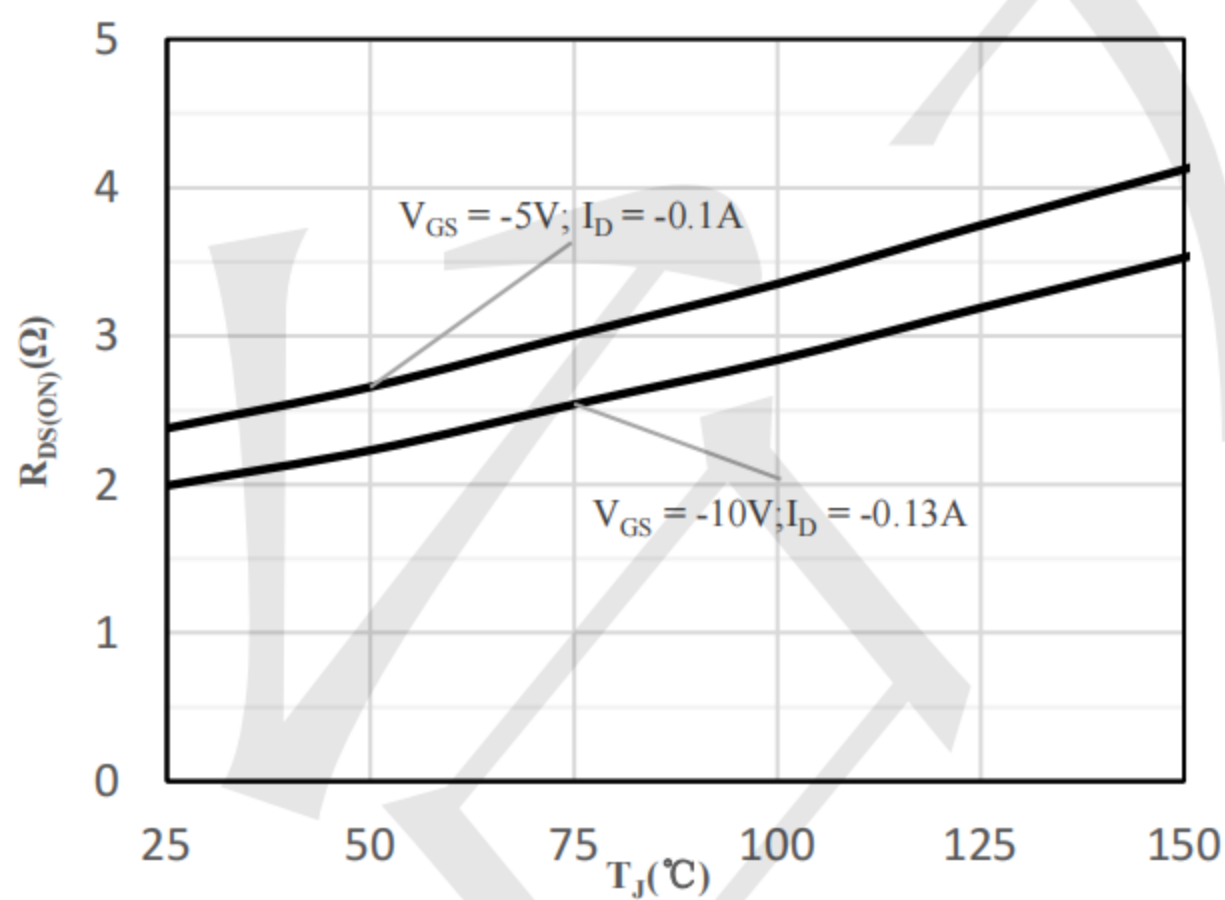


Fig 5 On-Resistance vs. Junction Temperature

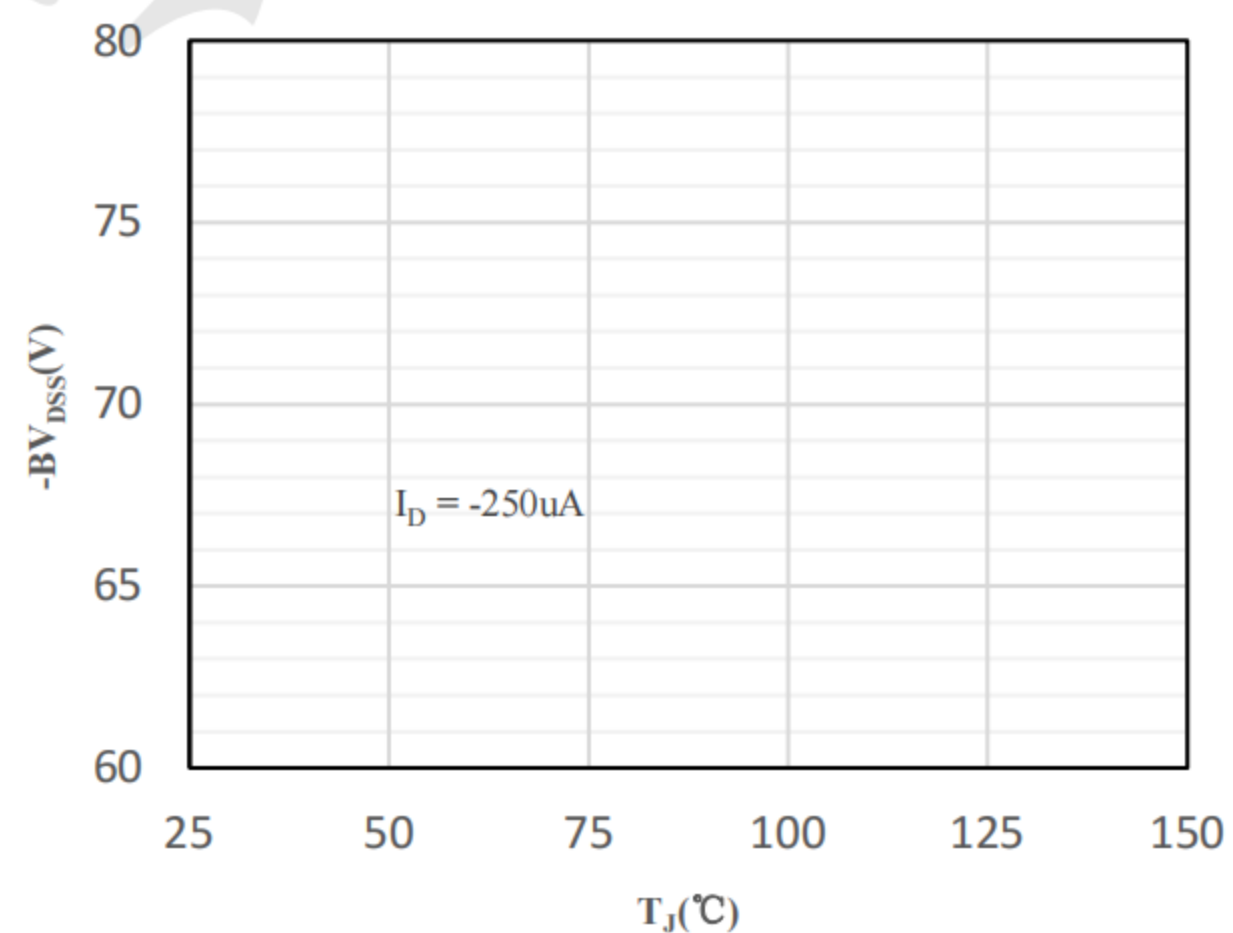
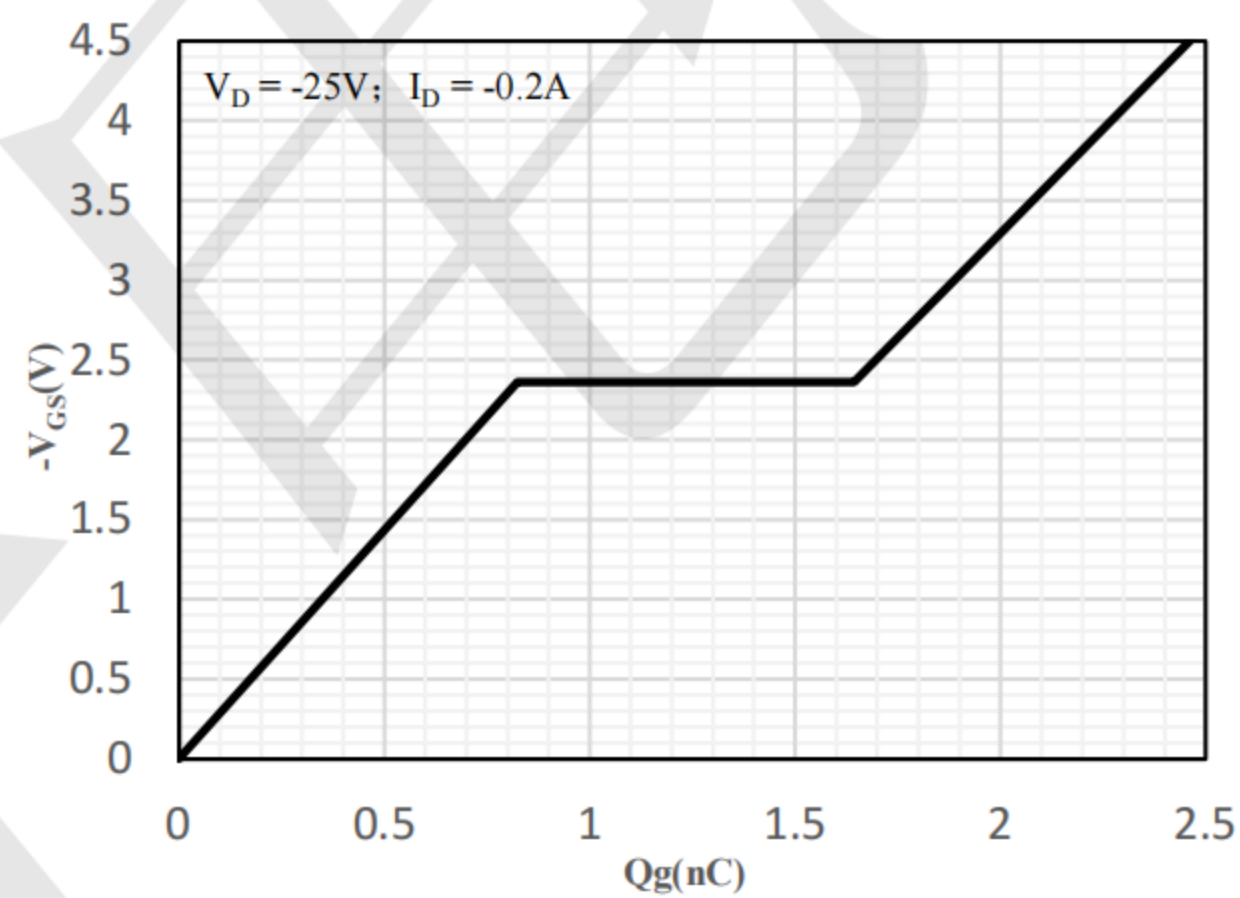
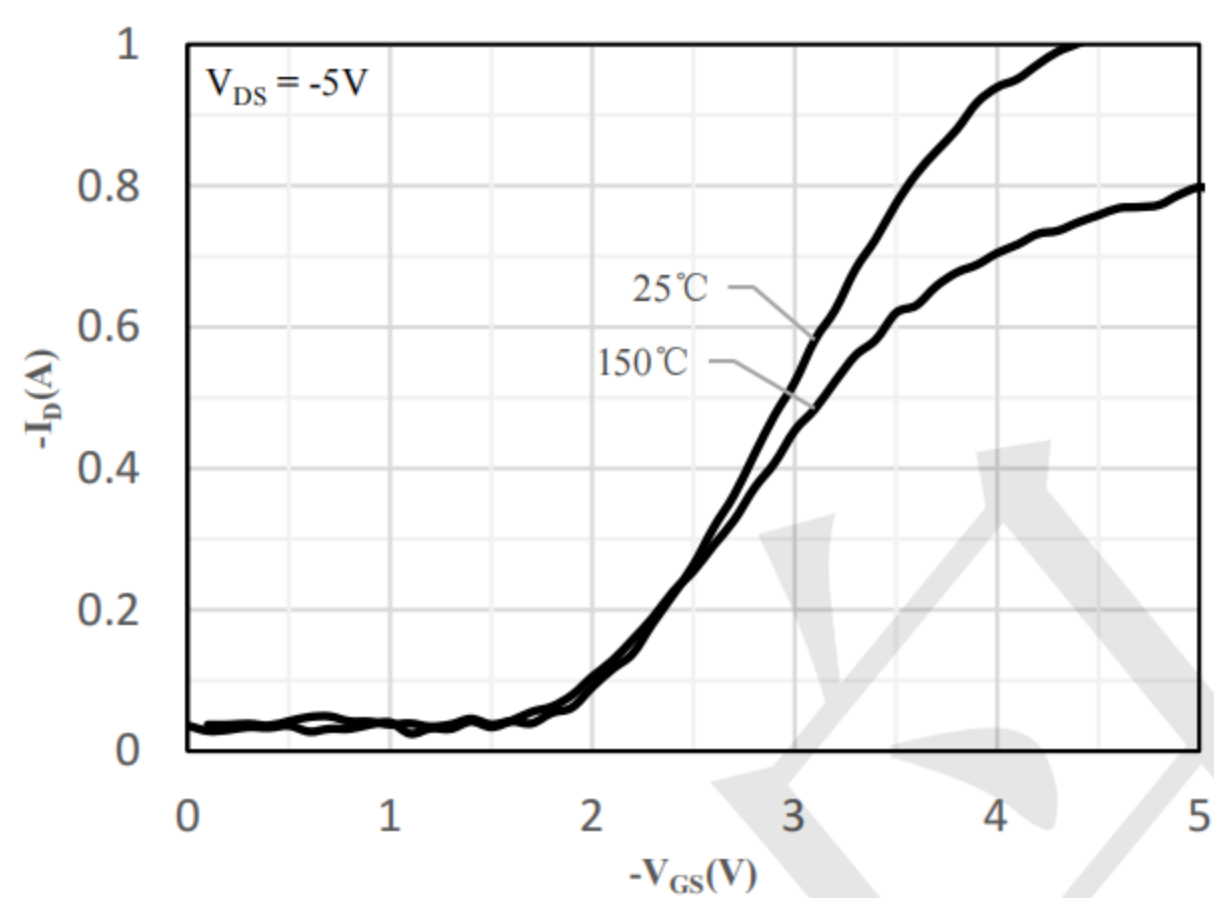
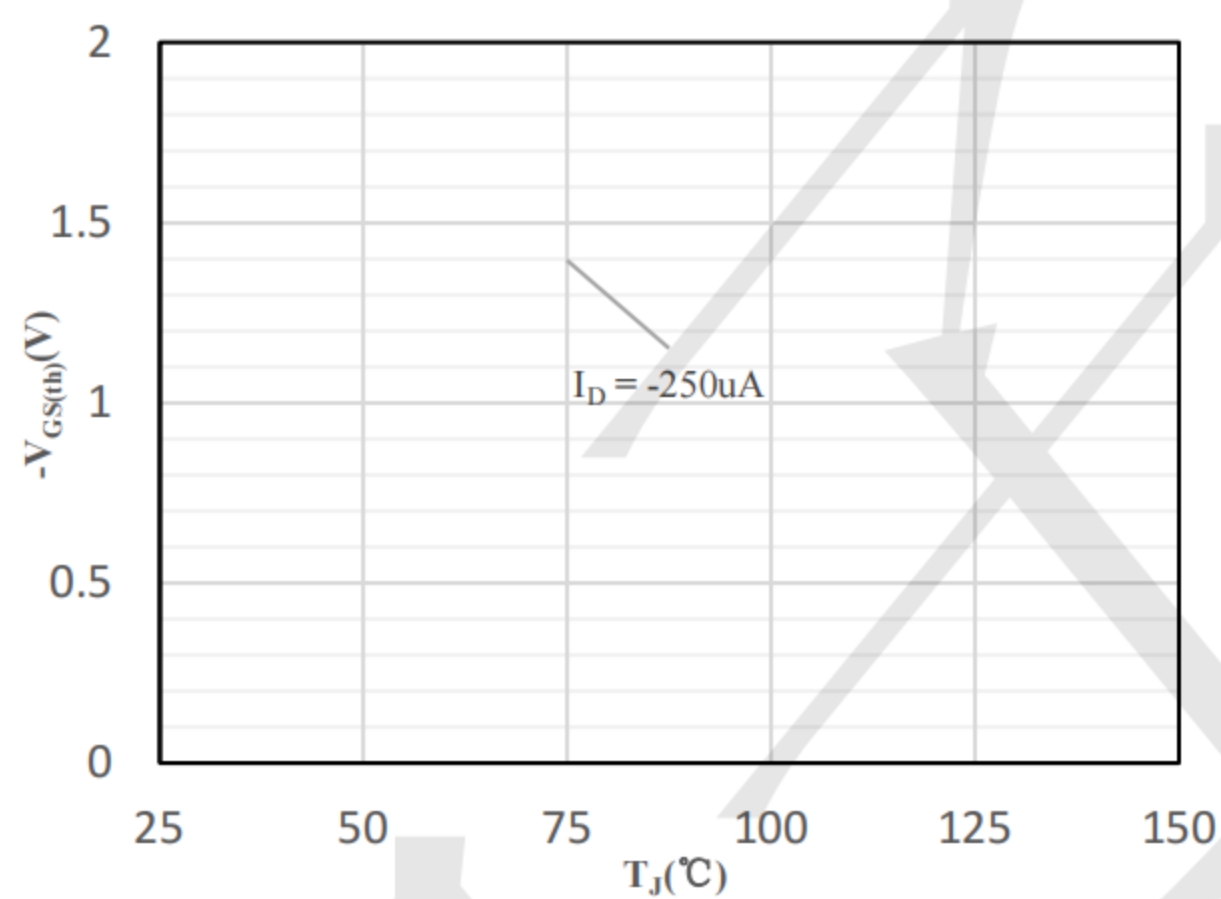
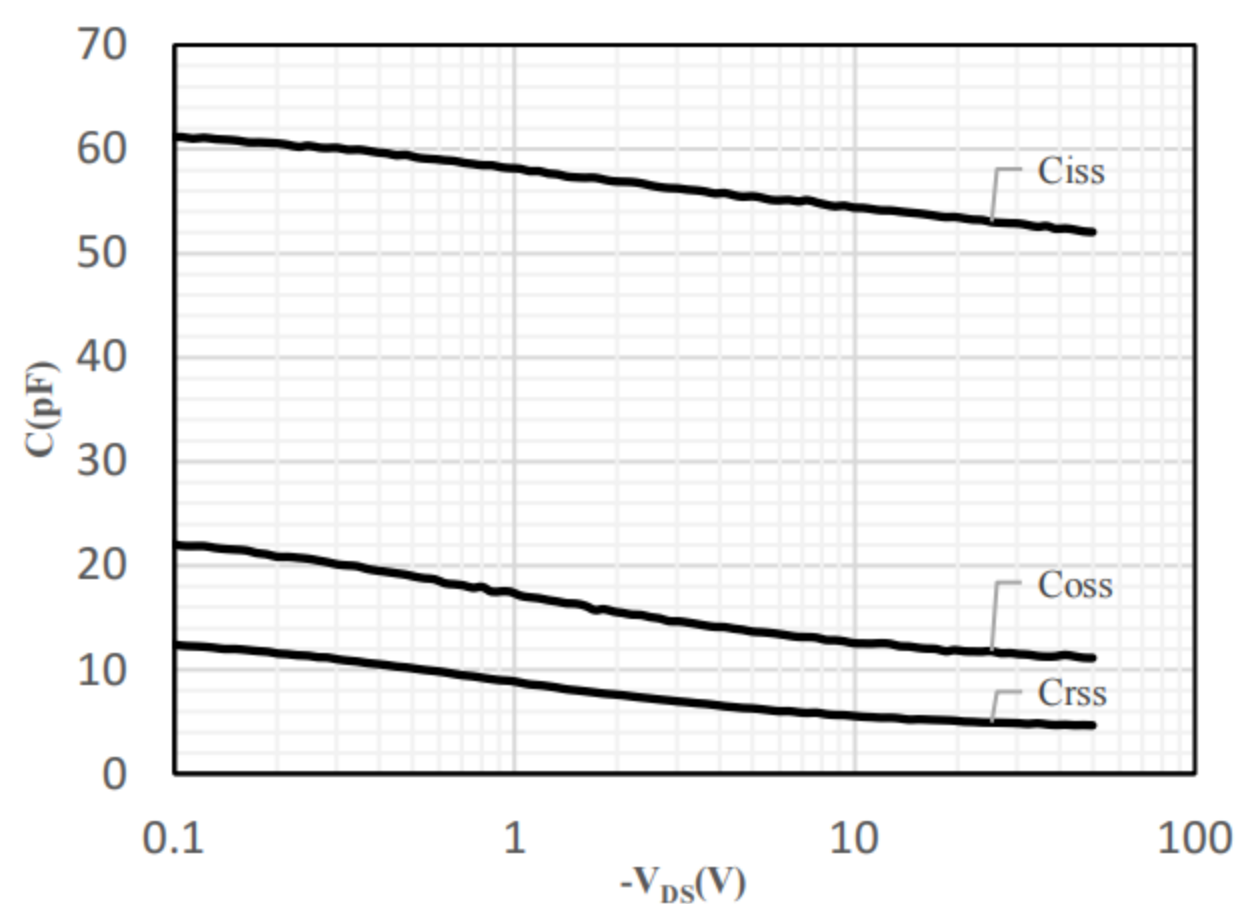
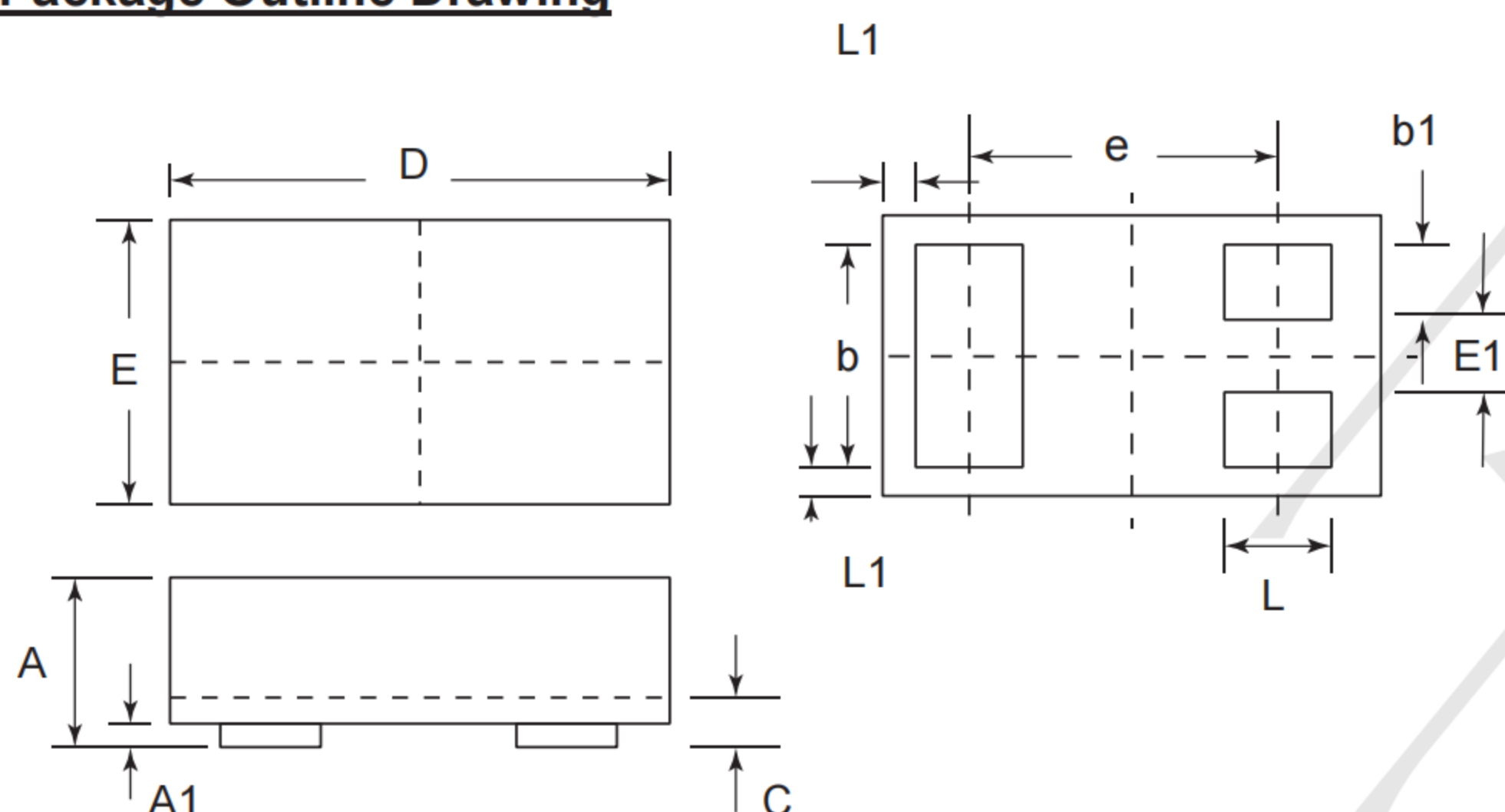


**Fig 6 Drain-Source Voltage vs.
Junction Temperature**



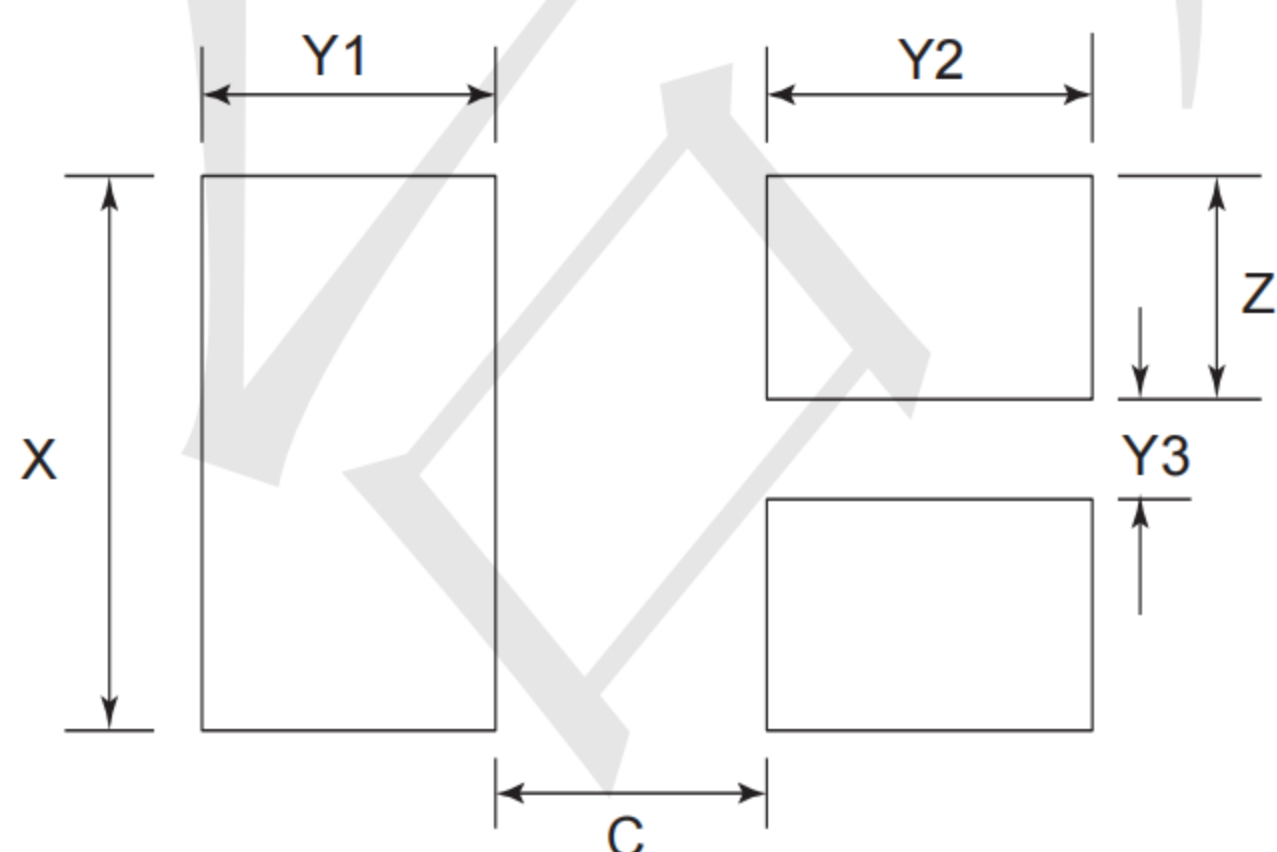
DFN1006-3L Package Outline Drawing

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SYM	DIMENSIONS					
	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.45	0.50	0.55	0.018	0.020	0.022
A1	0.00	0.02	0.05	0.000	0.001	0.002
b	0.45	0.50	0.55	0.018	0.020	0.022
b1	0.10	0.15	0.20	0.004	0.006	0.008
C	0.12	0.15	0.18	0.005	0.006	0.007
D	0.95	1.00	1.05	0.037	0.039	0.041
e	0.65 BSC			0.026 BSC		
E	0.55	0.60	0.65	0.022	0.024	0.026
E1	0.15	0.20	0.25	0.006	0.008	0.010
L	0.20	0.25	0.30	0.008	0.010	0.012
L1	0.05 REF			0.0002 REF		

Suggested Land Pattern



SYM	DIMENSIONS	
	MILLIMETERS	INCHES
C	0.25	0.010
X	0.65	0.024
Y1	0.50	0.020
Y2	0.50	0.020
Y3	0.25	0.010
Z	0.20	0.008