WANSEMI
万芯半导体

WP3025DP3

Enhancement Mode N+P-Channel Power MOSFET

PDFN3x3/N+P/30V.-30V/±20V/1.75V.-1.5V/

25A.-19A/9.5mΩ.15mΩ

Rev0.7

30V N+P-Channel MOSFET

1.Features

- High power and current handing capability
- Lead free product is acquired
- Fast switching
- Surface mount package

2.Applications

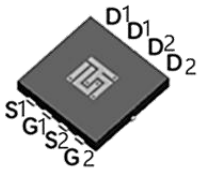
- DC motor
- PWM applications

- N-Channel

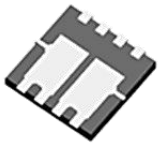
V_{DS}	$R_{DS(on)}$ Typ.	I_D
30V	9.5mΩ @ 10V	25A
	13.5mΩ @ 4.5V	

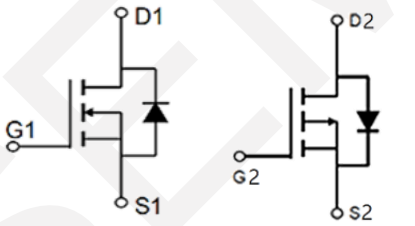
- P-Channel

V_{DS}	$R_{DS(on)}$ Typ.	I_D
-30V	15mΩ @ -10V	-19A
	19mΩ @ -4.5V	



PDFN3x3
Pin Description





N-Channel P-Channel

Schematic Diagram

3.Package Marking and Ordering Information

Part no.	Marking	Package	PCS/Tube	PCS/CTN.
WP3025DP3	WP3025DP3	PDF3x3	5,000	50,000

4.Absolute Max Ratings at Ta=25℃ (Note1)

Parameter	Symbol	N-chanel	P-chanel	Units
Drain to Source Voltage	V_{DSS}	30	-30	V
Gate to Source Voltage	V_{GSS}	±20	±20	V
Drain Current (DC)	I_D	25	-19	A
Drain Current (Pulse), PW≤300μs	I_{DM}	90	-60	A
Total Dissipation	P_D	21		W
Junction Temperature	T_j	-55 to +175		℃
Storage Temperature	T_{stg}			

Note 1: Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

5.Thermal Resistance Ratings (Note 2)

Parameter	Symbol	N-chanel	P-chanel	Unit
Maximum Junction-to-Ambient	$R_{\theta JA}$	7	7	℃/W

Note 2: When mounted on 1 inch square copper board t ≤ 10sec The value in any given application depends on the user's specific board design.

6.Electrical Characteristics at Ta=25℃ (Note 3)

N-Channel

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Drain to Source Breakdown Voltage	$V_{(BR)DSS}$	I_D = 250μA, V_{GS} = 0V	30			V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS} = 30V, V_{GS} = 0V			1	μA
Gate to Source Leakage Current	I_{GSS}	V_{GS} = ±20V, V_{DS} = 0V			±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_{DS}=250μA	1.0	1.75	2.5	V
Static Drain to Source On-State Resistance	$R_{DS(on)}$	I_D = 7A, V_{GS} = 10V		9.5	12	mΩ
		I_D = 6A, V_{GS} = 4.5V		13	18	mΩ
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=15V, Frequency=1.0MHz		450		pF
Output Capacitance	C_{oss}			150	-	pF
Reverse Transfer Capacitance	C_{rss}			90	-	pF
Turn-ON Delay Time	$t_{d(on)}$	V_{DD} =15V V_{GS} = 10V R_G = 3Ω R_L = 2.5Ω		5	-	ns
Rise Time	t_r			12	-	ns
Turn-OFF Delay Time	$t_{d(off)}$			19	-	ns
Fall Time	t_f			6	-	ns
Total Gate Charge	Q_g	V_{DS} = 15V, V_{GS} = 10V, I_D = 6A		9.5		nC
	Q_{gs}			2		nC
	Q_{gd}			1.9		nC
Diode Forward Voltage	V_{FSD}	I_S =25A, V_{GS} = 0V			1.2	V

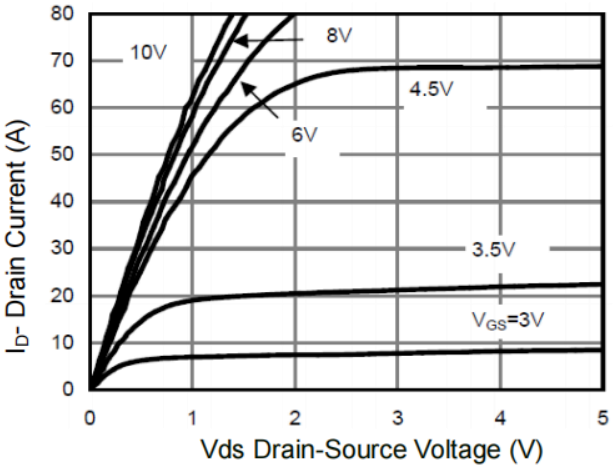
P-Channel

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Drain to Source Breakdown Voltage	$V_{(BR)DSS}$	I_D = -250μA, V_{GS} = 0V	-30			V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS} = -20V, V_{GS} = 0V			-1	μA
Gate to Source Leakage Current	I_{GSS}	V_{GS} = ±20V, V_{DS} = 0V			±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_{DS}=-250μA	-1.0	-1.5	-2.5	V
Static Drain to Source On-State Resistance	$R_{DS(on)}$	I_D = -6A, V_{GS} = -10V		15	35	mΩ
		I_D =-5A, V_{GS} =-4.5V		19	65	mΩ
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=-30V, Frequency=1.0MHz		920	-	pF
Output Capacitance	C_{oss}			140	-	pF
Reverse Transfer Capacitance	C_{rss}			90	-	pF
Turn-ON Delay Time	$t_{d(on)}$	V_{DD} = -15V, V_{GS} = -10V, R_{GEN} =3Ω, R_L=1.5Ω,		8	-	ns
Rise Time	t_r			30	-	ns
Turn-OFF Delay Time	$t_{d(off)}$			22	-	ns
Fall Time	t_f			26	-	ns
Total Gate Charge	Q_g	V_{DS} = -15V, V_{GS} = -10V, I_D = -6A		16.2		nC
	Q_{gs}			2.9		nC
	Q_{gd}			3.6		nC
Diode Forward Voltage	V_{FSD}	I_S = -6A, V_{GS} = 0V			-1.2	V

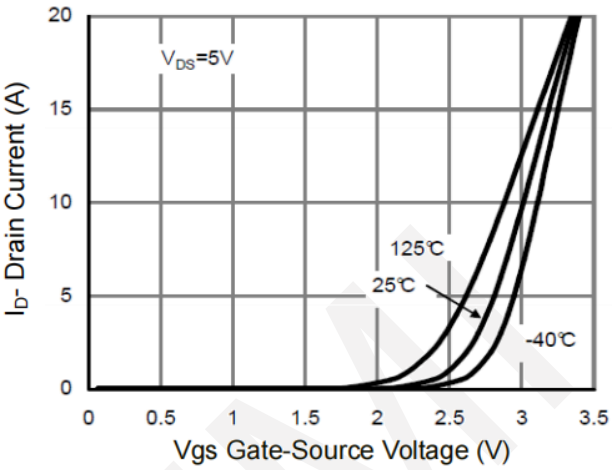
Note 3: Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

7.Typical electrical and thermal characteristics

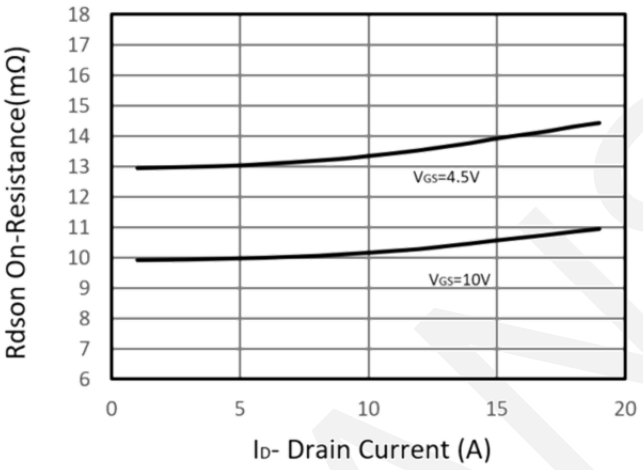
N-Channel



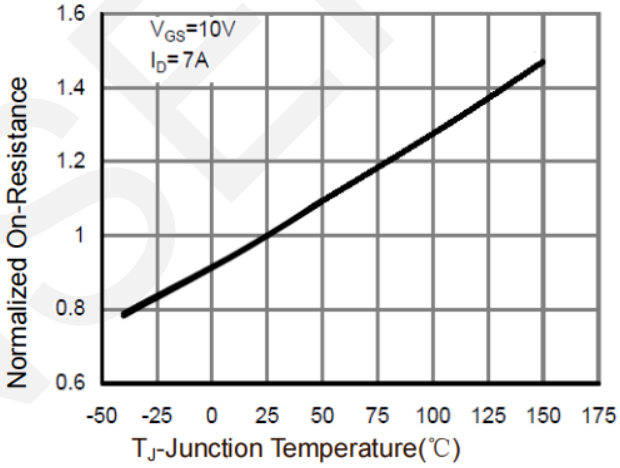
Output Characteristics



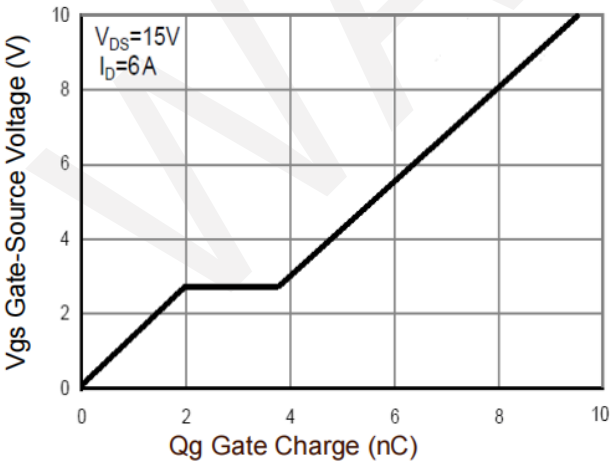
Transfer Characteristics



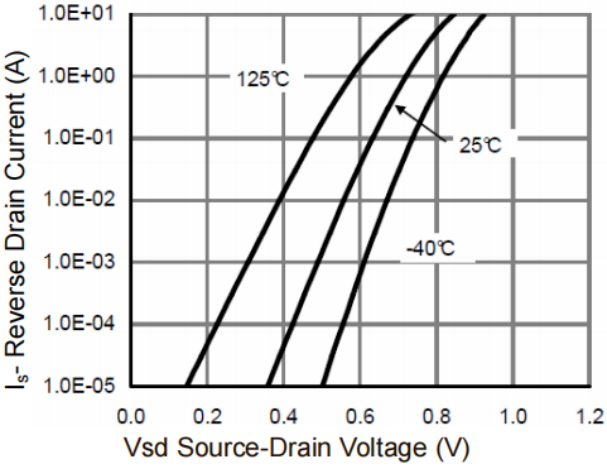
Rdson- Drain Current



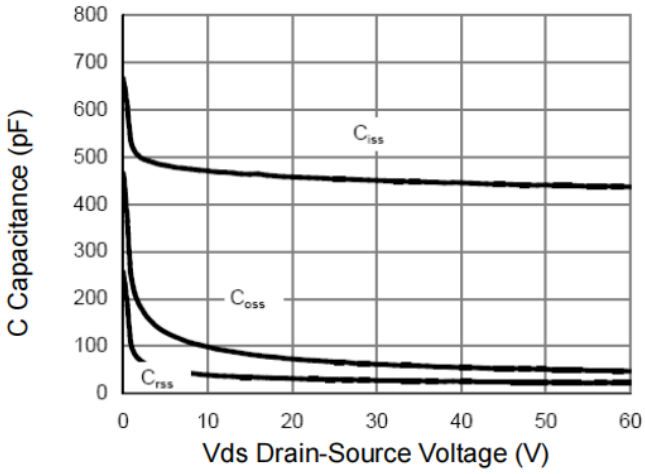
Rdson-Junction Temperature



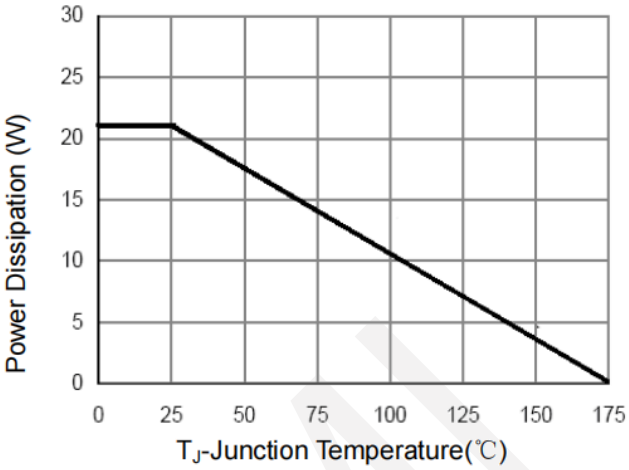
Gate Charge



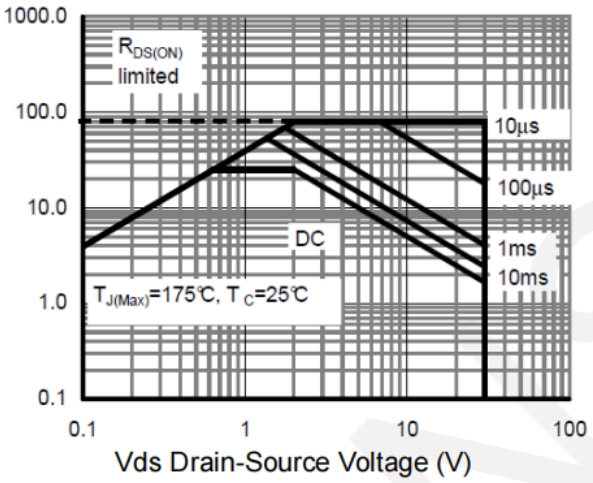
Source- Drain Diode Forward



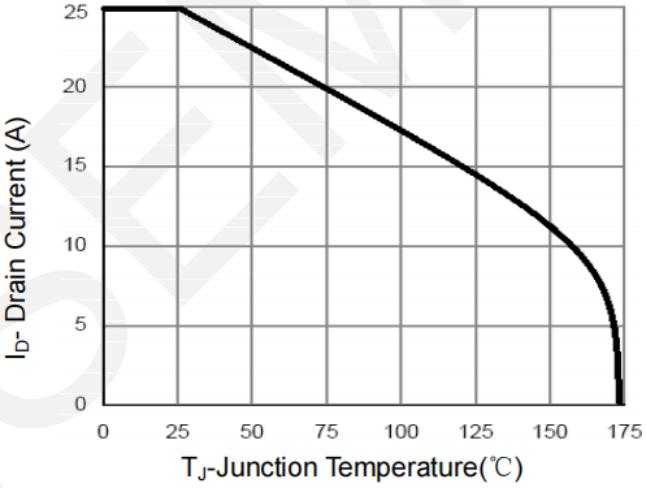
Capacitance vs Vds



Power De-rating

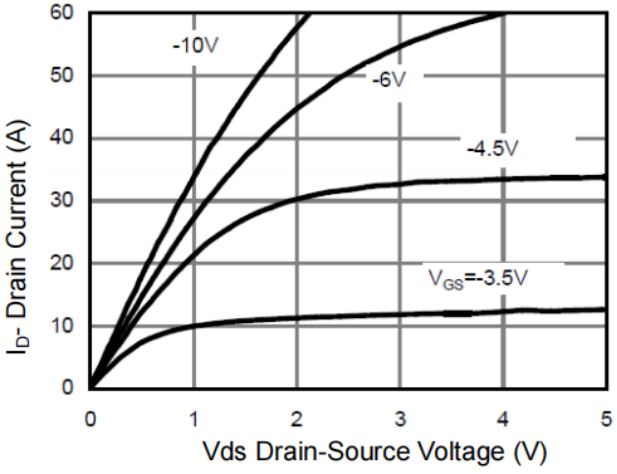


Safe Operation Area

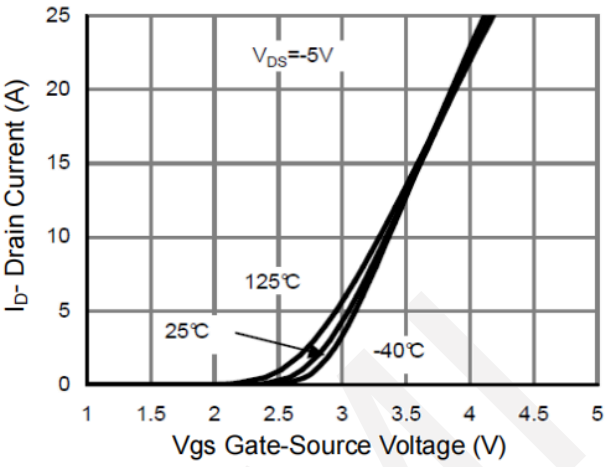


Current De-rating

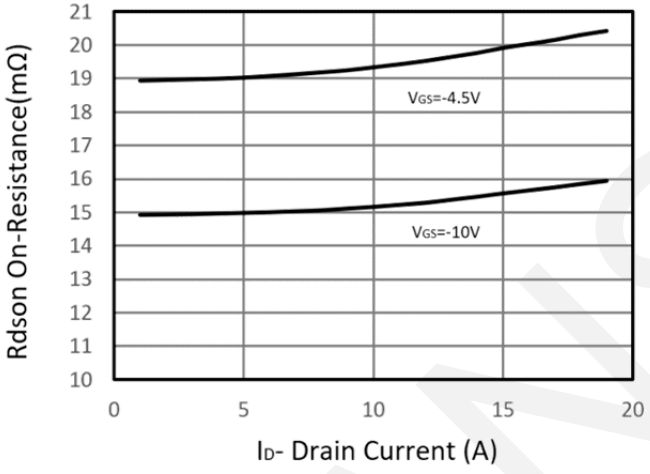
P-Channel



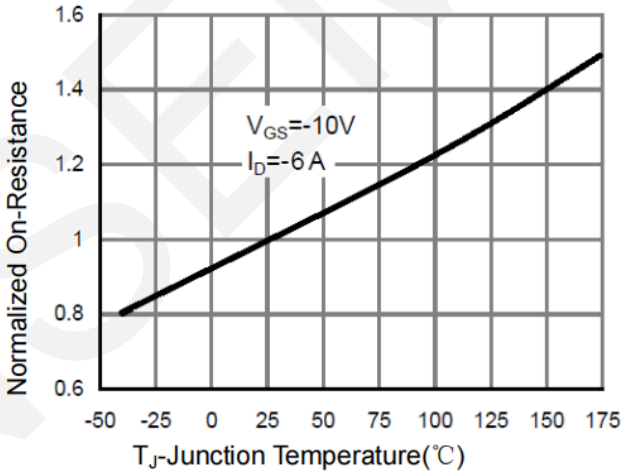
Output Characteristics



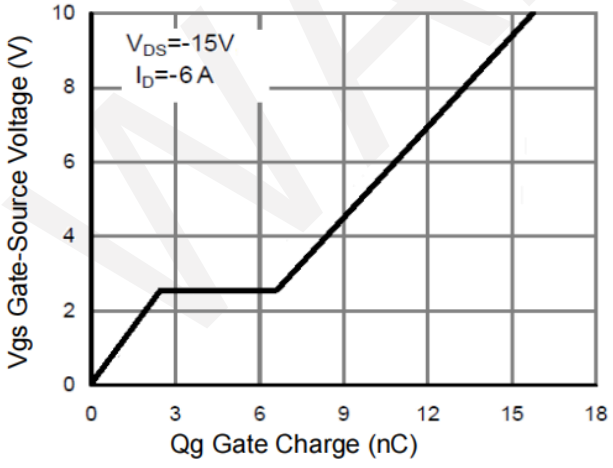
Transfer Characteristics



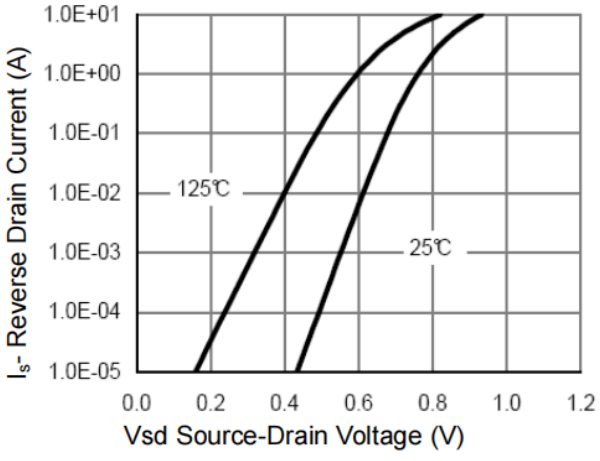
Rdson- Drain Current



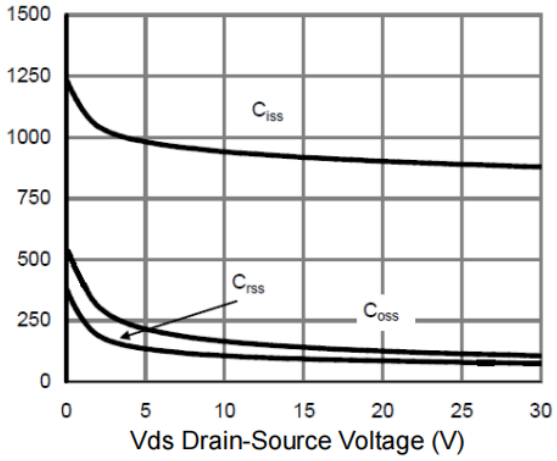
Rdson-Junction Temperature



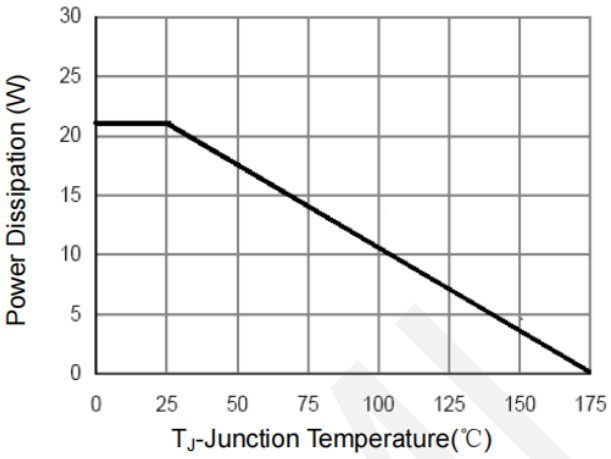
Gate Charge



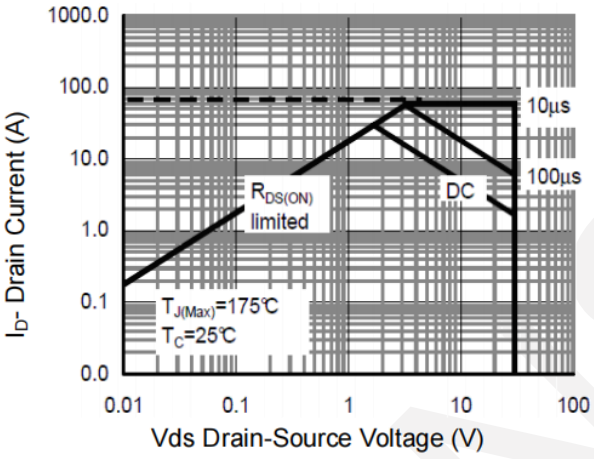
Source- Drain Diode Forward



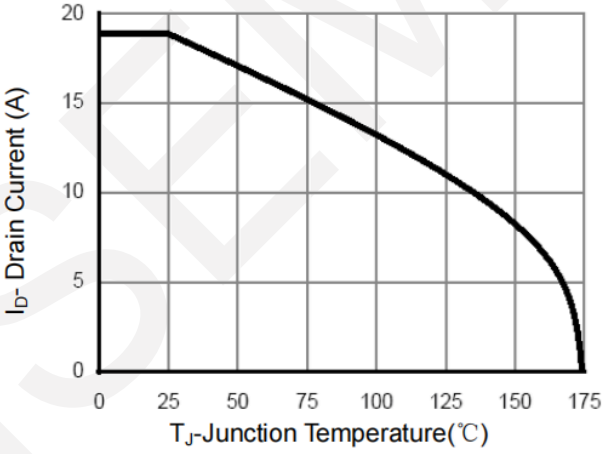
Capacitance vs Vds



Power De-rating

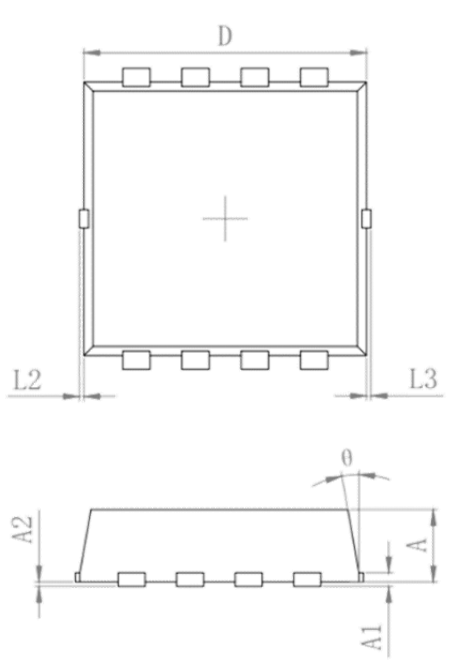


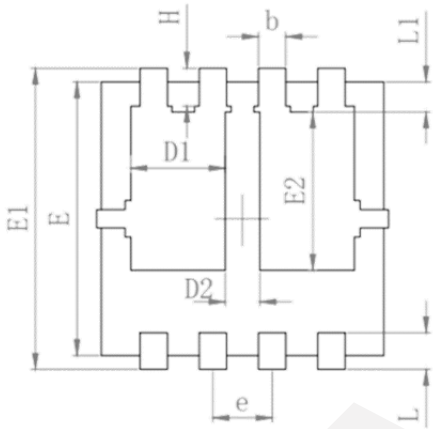
Safe Operation Area



Current De-rating

8.Package Dimensions





SYMBOL	MILLIMETER	
	MIN	MAX
A	0.700	0.900
A1	0.152 REF.	
A2	0~0.05	
D	3.000	3.200
D1	0.935	1.135
D2	0.280	0.480
E	2.900	3.100
E1	3.150	3.450
E2	1.535	1.935
b	0.200	0.400
e	0.550	0.750
L	0.300	0.500
L1	0.180	0.480
L2	0~0.100	
L3	0~0.100	
H	0.315	0.515
θ	8°	12°

9. Important Notice

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