WANSEMI
万代半导体

WX017D04Q3

Enhancement Mode N+P-Channel Power MOSFET

PDFN3x3/N+PMOS/40V/±20V/1.6V/10A/17.4mΩ

-40V/±20V/-1.6V/-10A/40.4mΩ

Rev0.5

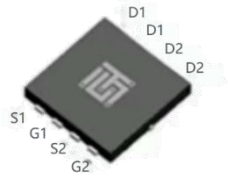
40V N+P-Channel MOSFET

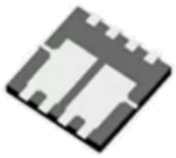
1.Features

- High power and current handing capability
- Lead free product is acquired
- Fast switching
- Surface mount package
- 100% RG Tested
- 100% UIS Tested

2.Applications

- DC motor
- PWM applications





PDFN3x3

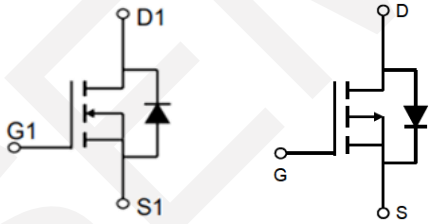
Pin Description

- N-Channel

V_{DS}	$R_{DS(on)}$ Typ.	I_D
40V	17.4mΩ @ 10V	10A
	22mΩ @ 4.5V	

- P-Channel

V_{DS}	$R_{DS(on)}$ Typ.	I_D
-40V	40.4mΩ @ -10V	-10A
	52mΩ @ -4.5V	



N-Channel P-Channel

Schematic Diagram

3.Package Marking and Ordering Information

Part no.	Marking	Package	PCS/Tube	PCS/CTN.
WX017D04Q3	017D04	PDFN3x3	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}	40	-40	V
Gate to Source Voltage	V_{GSS}	±20	±20	V
Drain Current (DC)	I_D	10	-10	A
Drain Current (Pulse), PW≤300μs	I_{DM}	40	-40	A
Avalanche Energy, Single Pulsed	E_{AS}	30.25	42.25	mJ
Total Dissipation	P_D	2	3.2	W
Junction Temperature	T_j	-55 to +155		℃
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	$R_{\theta JA}$	62.5	39	℃/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	40	-	-	V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS} = 40V, 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	1.2	1.6	2.5	V
Static Drain to Source On-State Resistance	$R_{DS(on)}$	I_D = 8A, V_{GS} = 10V	-	17.4	23	mΩ
		I_D = 5A, V_{GS} = 4.5V	-	22	30	mΩ
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=20V, Frequency=1.0MHz	-	837	-	pF
Output Capacitance	C_{oss}		-	59	-	pF
Reverse Transfer Capacitance	C_{rss}		-	43	-	pF
Turn-ON Delay Time	$t_{d(on)}$	V_{DD} =20V V_{GS} = 10V R_{GEN} = 3Ω R_L = 2.5Ω	-	4	-	ns
Rise Time	t_r		-	3	-	ns
Turn-OFF Delay Time	$t_{d(off)}$		-	15	-	ns
Fall Time	t_f		-	2	-	ns
Total Gate Charge	Q_g	V_{DS} = 20V, V_{GS} = 10V, I_D = 8A	-	12	-	nC
	Q_{gs}		-	3.2	-	nC
	Q_{gd}		-	3.1	-	nC
Diode Forward Voltage	V_{FSD}	I_S =8A, V_{GS} = 0V	0.5	-	1.2	V

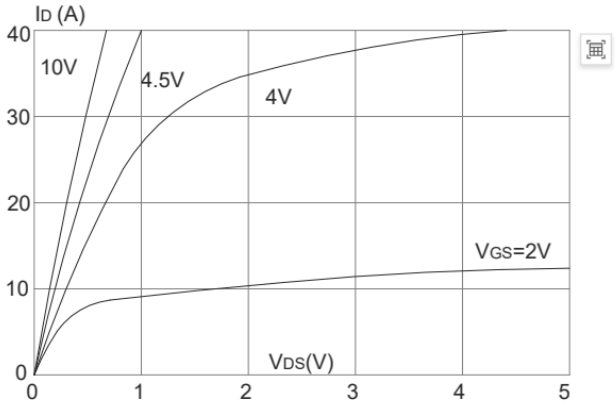
P-Channel

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Drain to Source Breakdown Voltage	$V_{(BR)DSS}$	I_D = -250μA, V_{GS} = 0V	-40	-	-	V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS} = -40V, 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	-1.6	-2.5	V
Static Drain to Source On-State Resistance	$R_{DS(on)}$	I_D = -6A, V_{GS} = -10V	-	40.4	52	mΩ
		I_D =-4A, V_{GS} =-4.5V	-	52	75	mΩ
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=-20V, Frequency=1.0MHz	-	936	-	pF
Output Capacitance	C_{oss}		-	73	-	pF
Reverse Transfer Capacitance	C_{rss}		-	57	-	pF
Turn-ON Delay Time	$t_{d(on)}$	V_{DD} = -20V V_{GS} = -10V R_{GEN} =6Ω, R_L=2.3Ω,	-	7.5	-	ns
Rise Time	t_r		-	55	-	ns
Turn-OFF Delay Time	$t_{d(off)}$		-	19	-	ns
Fall Time	t_f		-	7	-	ns
Total Gate Charge	Q_g	V_{DS} = -20V, V_{GS} = -10V, I_D = -6A	-	13	-	nC
	Q_{gs}		-	3.8	-	nC
	Q_{gd}		-	3.1	-	nC
Diode Forward Voltage	V_{FSD}	I_S = -6A, V_{GS} = 0V	0.5	-	-1.2	V

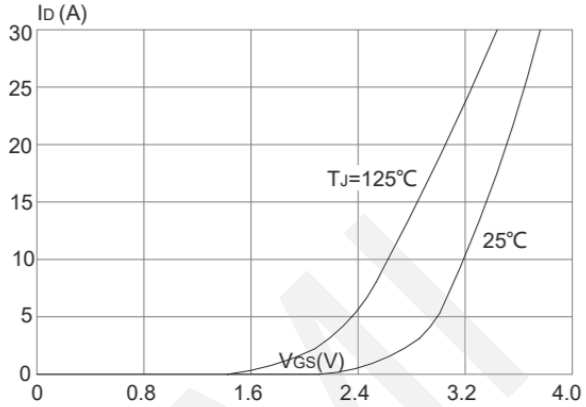
Note 3: Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

7.Typical electrical and thermal characteristics

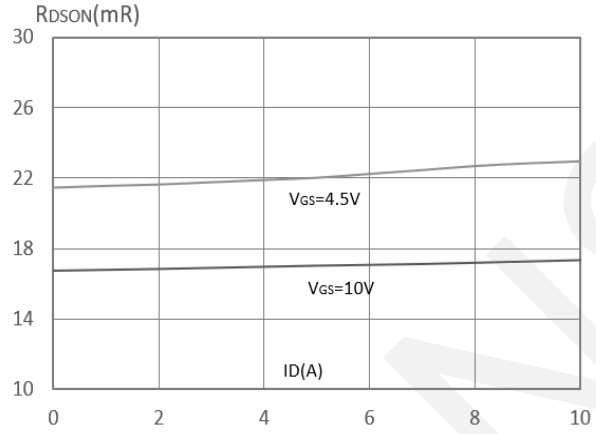
N-Channel



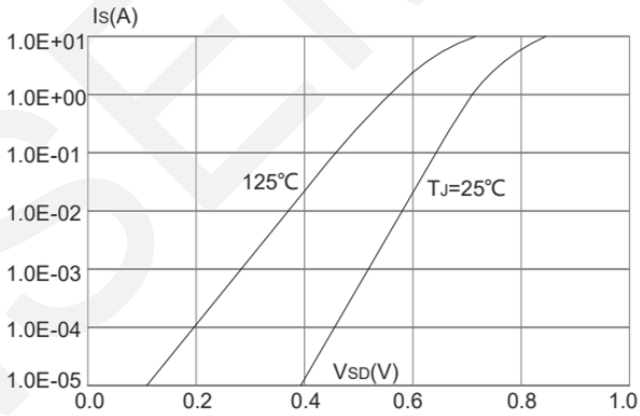
Output Characteristics



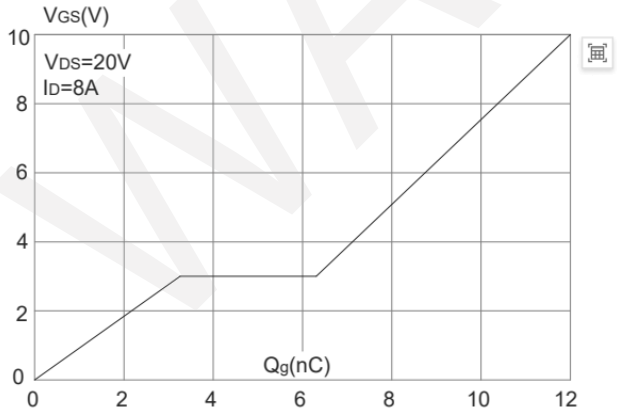
Transfer Characteristics



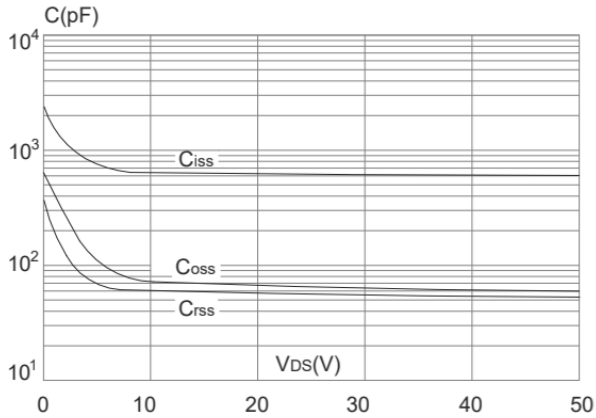
Rdson- Drain Current



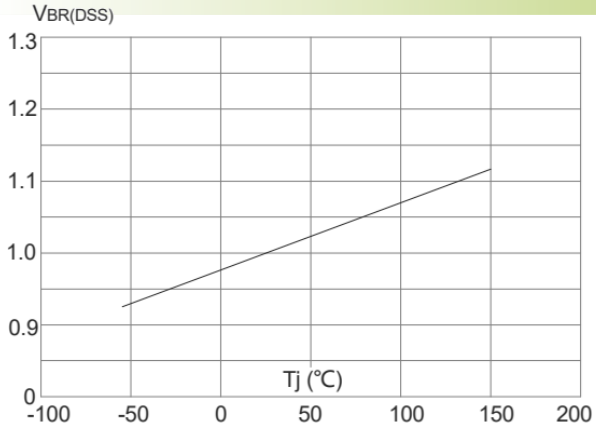
Body Diode Characteristics



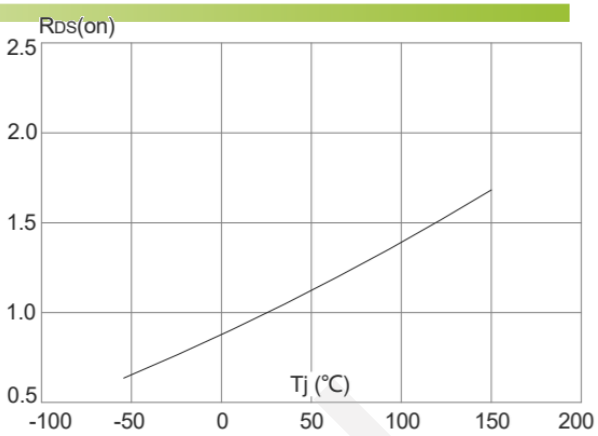
Gate Charge



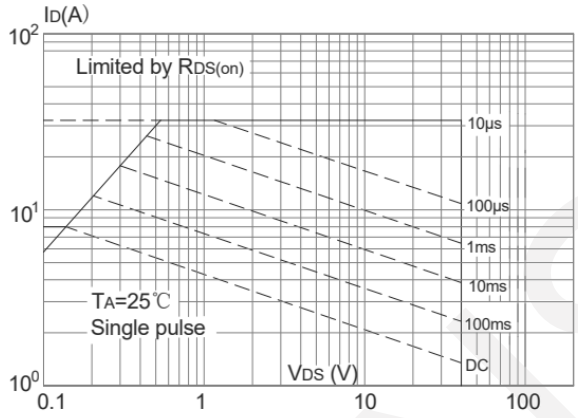
Capacitance Characteristics



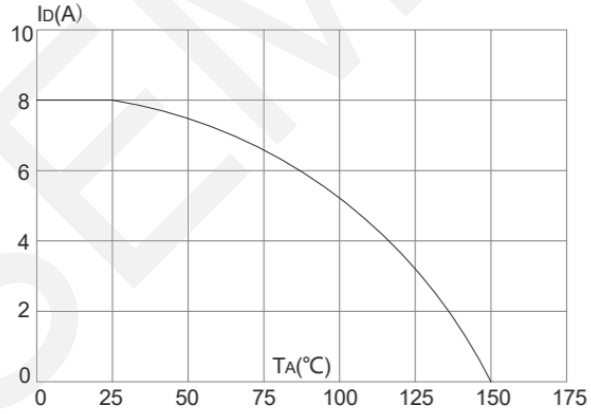
Normalized Breakdown Voltage vs. Junction Temperature



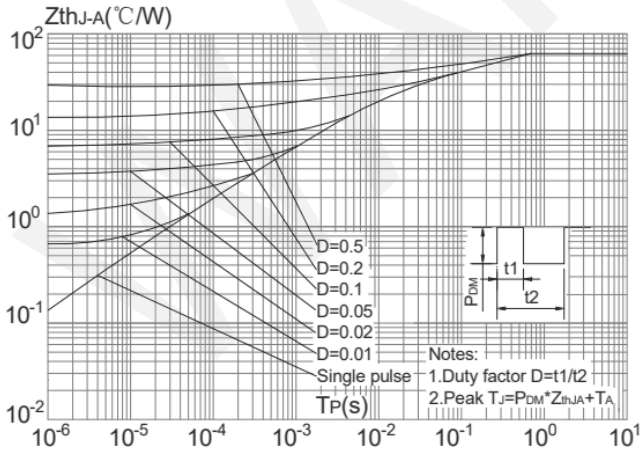
Normalized on Resistance vs. Junction Temperature



Maximum Safe Operating Area

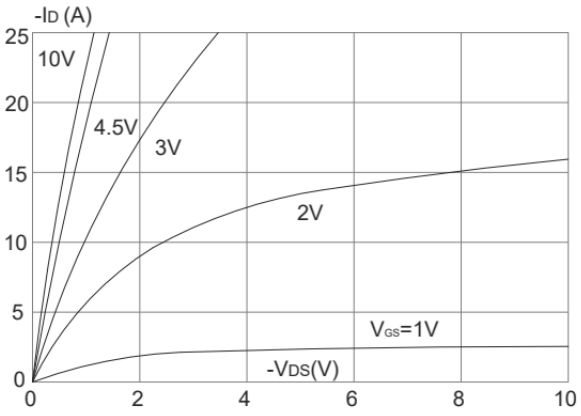


Maximum Continuous Drain Current vs. Ambient Temperature

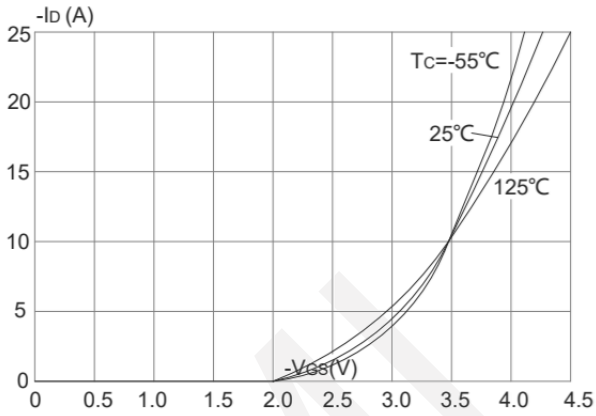


Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

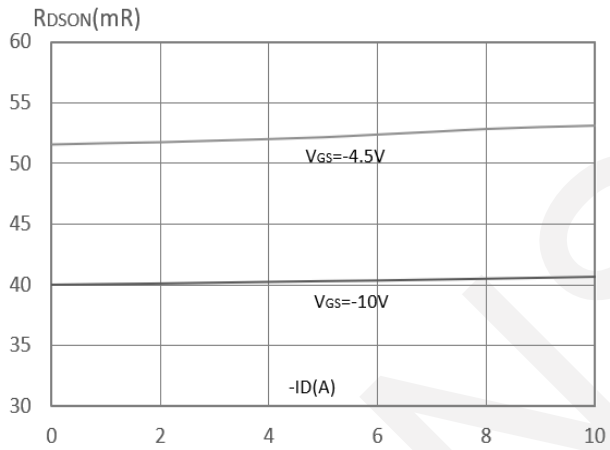
P-Channel



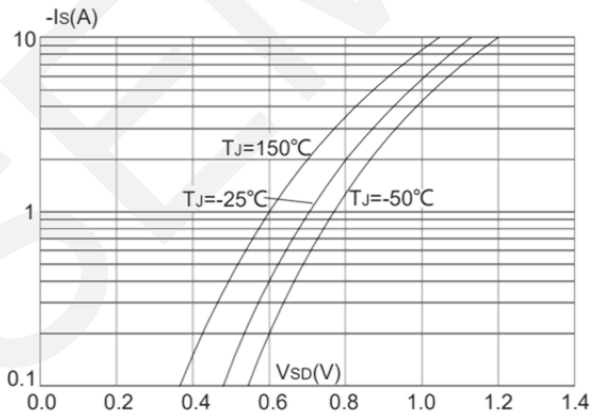
Output Characteristics



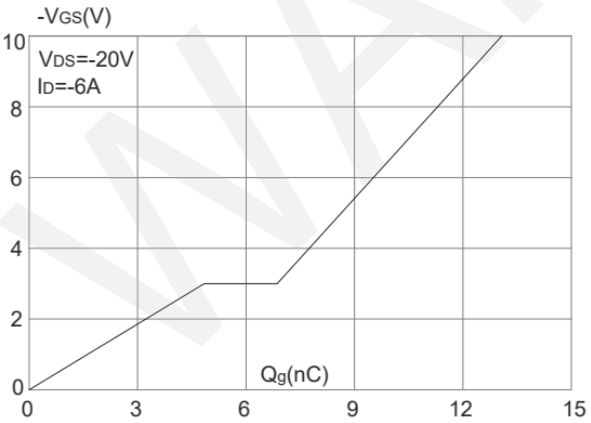
Transfer Characteristics



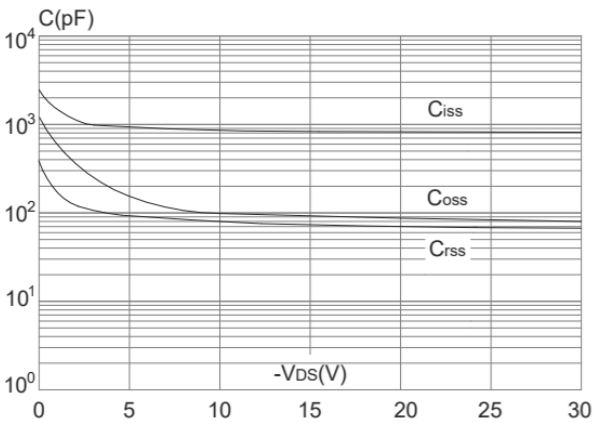
Rdson- Drain Current



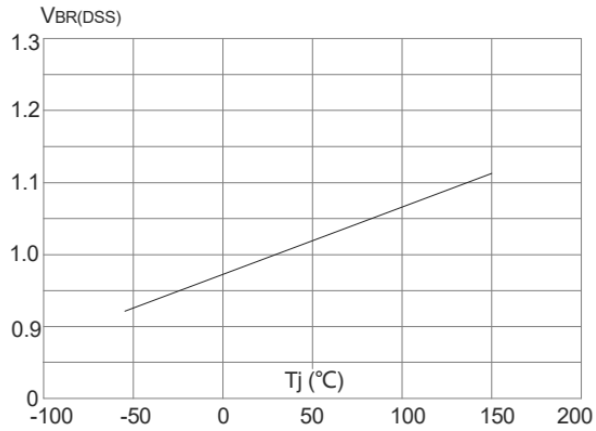
Body Diode Characteristics



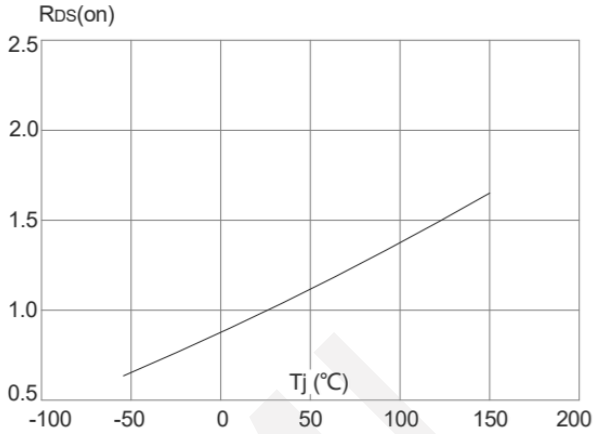
Gate Charge



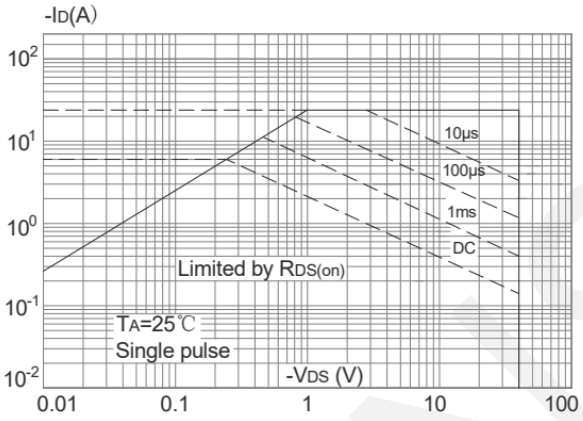
Capacitance Characteristics



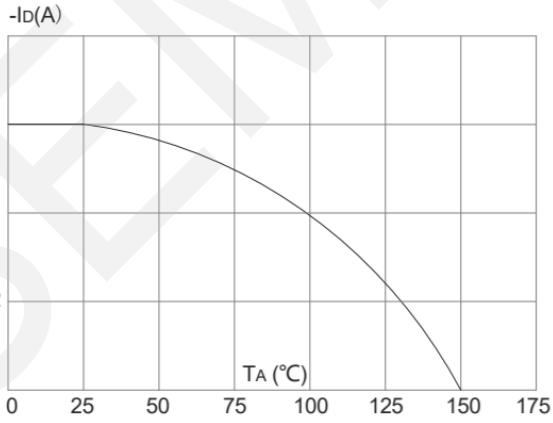
Normalized Breakdown Voltage vs. Junction Temperature



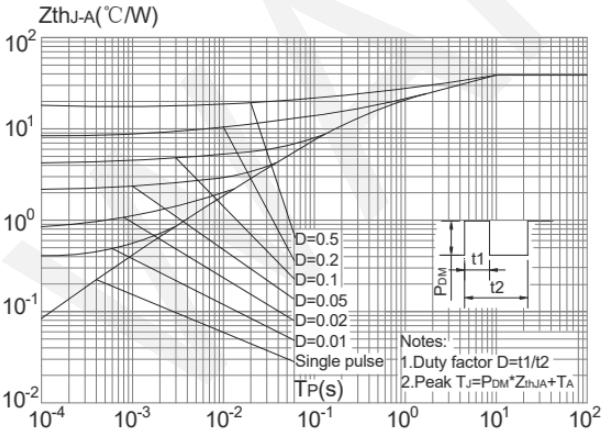
Normalized on Resistance vs. Junction Temperature



Maximum Safe Operating Area

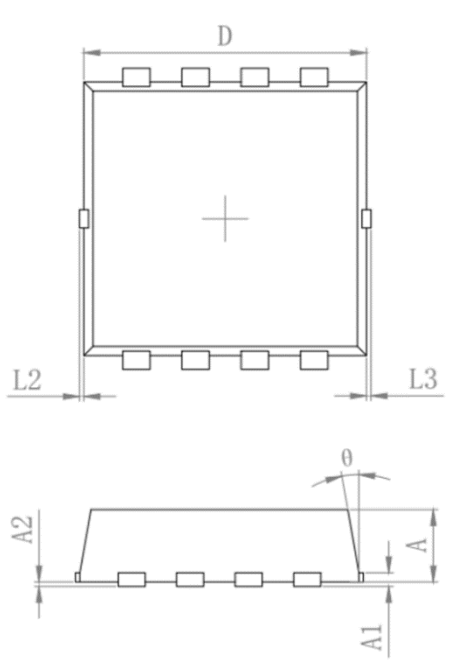


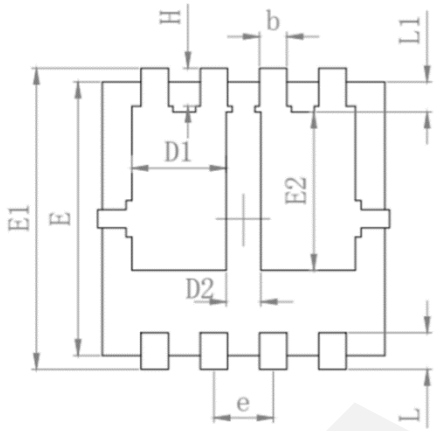
Maximum Continuous Drain Current vs. Ambient Temperature



Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

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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