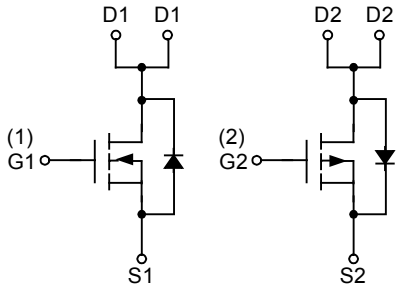
■ PRODUCT CHARACTERISTICS

N-CHANNEL		P-CHANNEL	
V_{DSS}	40V	V_{DSS}	-40V
$R_{DS(ON)}$Typ(@V_{GS}=10V)	12mΩ	$R_{DS(ON)}$Typ(@V_{GS}=-10V)	29mΩ
$R_{DS(ON)}$Typ(@V_{GS}=4.5V)	17mΩ	$R_{DS(ON)}$Typ(@V_{GS}=-4.5V)	35mΩ
I_D	28A	I_D	-15A

Symbol

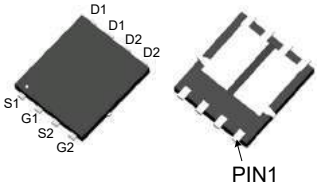


■ APPLICATIONS

* Electronic lamp ballasts based on half bridge
* Load Switching,Quick/Wirelss Charge.
* Motor Driving

■ FEATURE

* Low Gate Charge
* Pb-Free Lead Plating



PDFN3X3

■ ORDER INFORMATION

Order Codes		Package	Packing
Halogen-Free	Halogen		
N/A	MOT4633J	PDFN3X3	5000 pieces/Reel

■ ABSOLUTE MAXIMUM RATINGS(T_A=25°C,unless otherwise specified)

Parameter	Symbol	N-channel	P-channel	Unit
Drain-Source Voltage	V_{DSS}	40	-40	V
Gate-Source Voltage	V_{GSS}	±20	±20	V
Drain Current Continuous(@V_{GS}=10V ,T_A=25°C)	I_D	28	-15	A
Drain Current Pulsed	I_{DM}	112	-60	A
Avalanche Energy	E_{AS}	90	80	mJ
Power Dissipation	P_D	35		W
Junction Temperature	T_J	+150		°C
Storage Temperature	T_{STG}	-55~ +150		°C

■ THERMAL CHARACTERISTICS

Parameter	Symbol	Typ	Unit
Junction to Ambient	R_{thJA}	3.6	°C/W

■ N-MOS ELECTRICAL CHARACTERISTICS (T_C=25°C, unless otherwise noted)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Off characteristics						
Drain to Source Breakdown Voltage	V_{DSS}	V_{GS}=0V,I_D=250μA	40	-	-	V
Drain to Source Leakage Current	I_{DSS}	V_{DS}=40V,V_{GS}=0V	-	-	-1	μA
Gate to Source Forward Leakage	$I_{GSS(F)}$	V_{GS}=+20V,V_{DS}=0V	-	-	100	nA
Gate to Source Reverse Leakage	$I_{GSS(R)}$	V_{GS}=-20V ,V_{DS}=0V	-	-	-100	nA
On characteristics						
Drain to Source On-Resistance	$R_{DS(ON)}$	V_{GS}=10V,I_D=15A	-	12	17	mΩ
		V_{GS}=4.5V,I_D=10A	-	17	25	mΩ
Gate Threshold Voltage	$V_{GS(TH)}$	V_{DS}=V_{GS},I_D=250μA	1	1.4	2.5	V
Dynamic characteristics						
Gate capacitance	R_g	V_{GS}=0V,V_{DS}=0V ,f=1.0MHz	-	3.5	-	Ω
Forward Transconductance	g_{fs}	V_{DS}=10V,I_D=3A	5	-	-	S
Input Capacitance	C_{iss}	V_{DS}=20V,V_{GS}=0V f=1.0MHz	-	1163	-	pF
Output Capacitance	C_{oss}		-	104	-	pF
Reverse Transfer Capacitance	C_{rss}		-	100	-	pF
Resistive Switching Characteristics						
Turn-on Delay Time	$t_{d(ON)}$	V_{GS}=10V, V_{DS}=20V, I_D=-10 A,R_G=3Ω	-	5.5	-	ns
Rise Time	t_r		-	14	-	ns
Turn-off Delay Time	$t_{d(OFF)}$		-	24	-	ns
Fall Time	t_f		-	12	-	ns
Total Gate Charge	Q_g	I_D=10 A, V_{DS}=20V V_{GS}=10V	-	28	-	nC
Gate to Source Charge	Q_{gs}		-	3.9	-	nC
Gate to Drain("Miller") Charge	Q_{gd}		-	5.9	-	nC
Source-Drain Diode Characteristics						
Continuous Source Current(Body Diode)	I_S		-	-	28	A
Maximum Pulsed Current(Body Diode)	I_{SM}		-	-	112	A
Diode Forward Voltage	V_{SD}	I_{SD}=1A, V_{GS}=0V	-	0.75	1.2	V
Reverse Recovery Time	t_{rr}	I_{SD}=10 A, T_J=25 °C dI/dt=100A/μs	-	33	-	ns
Reverse Recovery Charge	Q_{rr}		-	20	-	nC

■ P-MOS ELECTRICAL CHARACTERISTICS (T_C=25°C, unless otherwise noted)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Off characteristics						
Drain to Source Breakdown Voltage	V_{DSS}	V_{GS}=0V,I_D=-250μA	-40	-	-	V
Drain to Source Leakage Current	I_{DSS}	V_{DS}=-40V,V_{GS}=0V	-	-	-1	μA
Gate to Source Forward Leakage	$I_{GSS(F)}$	V_{GS}=+20V,V_{DS}=0V	-	-	100	nA
Gate to Source Reverse Leakage	$I_{GSS(R)}$	V_{GS}=-20V ,V_{DS}=0V	-	-	-100	nA
On characteristics						
Drain to Source On-Resistance	$R_{DS(ON)}$	V_{GS}=-10V,I_D=-7A	-	29	35	mΩ
		V_{GS}=-4.5V,I_D=-4A	-	35	45	mΩ
Gate Threshold Voltage	$V_{GS(TH)}$	V_{DS}=V_{GS},I_D=-250μA	-1	-1.5	-2.5	V
Dynamic characteristics						
Gate capacitance	R_g	V_{GS}=0V,V_{DS}=0V ,f=1.0MHz	-	5.1	-	Ω
Forward Transconductance	g_{fs}	V_{DS}=-10V,I_D=-3A	5	-	-	S
Input Capacitance	C_{iss}	V_{DS}=-20V,V_{GS}=0V f=1.0MHz	-	1060	-	pF
Output Capacitance	C_{oss}		-	121	-	pF
Reverse Transfer Capacitance	C_{rss}		-	111	-	pF
Resistive Switching Characteristics						
Turn-on Delay Time	$t_{d(ON)}$	V_{GS}=-10V,V_{DS}=-20V, I_D=-7 A,R_G=2.5Ω	-	5.5	-	ns
Rise Time	t_r		-	14	-	ns
Turn-off Delay Time	$t_{d(OFF)}$		-	24	-	ns
Fall Time	t_f		-	12	-	ns
Total Gate Charge	Q_g	I_D=-7 A, V_{DS}=-20V V_{GS}=-10V	-	26	-	nC
Gate to Source Charge	Q_{gs}		-	3.7	-	nC
Gate to Drain("Miller") Charge	Q_{gd}		-	6	-	nC
Source-Drain Diode Characteristics						
Continuous Source Current(Body Diode)	I_S		-	-	-15	A
Maximum Pulsed Current(Body Diode)	I_{SM}		-	-	- 60	A
Diode Forward Voltage	V_{SD}	I_{SD}=-1A, V_{GS}=0V	-	-0.76	-1.2	V
Reverse Recovery Time	t_{rr}	I_{SD}=-7 A, T_J=25 °C dI/dt=100A/μs	-	22	-	ns
Reverse Recovery Charge	Q_{rr}		-	10.5	-	nC

■ N-MOS TYPICAL CHARACTERISTICS(Cont.)

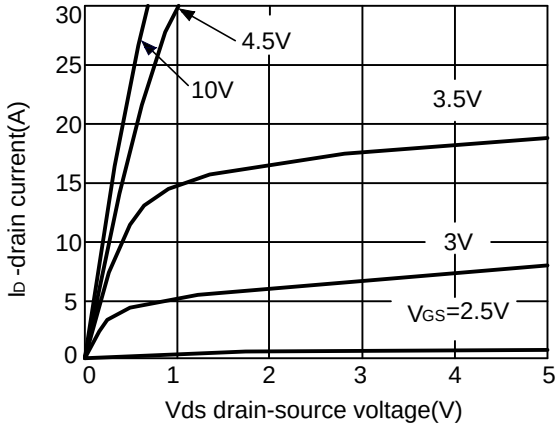


Figure1:output characteristics

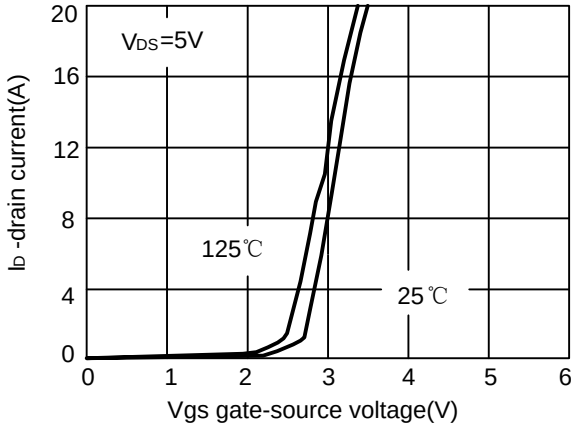


Figure2:transfer characteristics

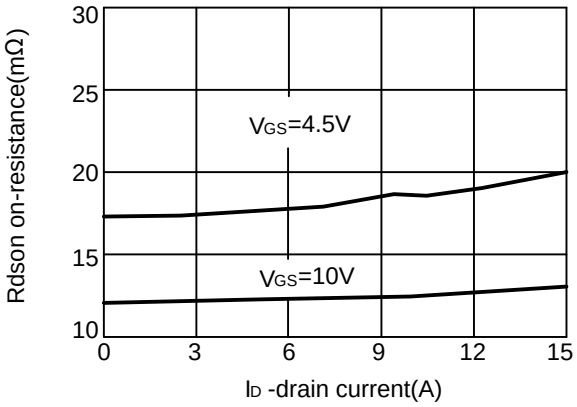


Figure3:drain-source on-resistance

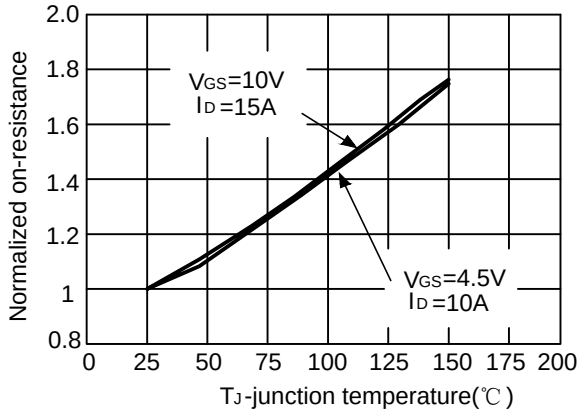


Figure4:drain-source on-resistance

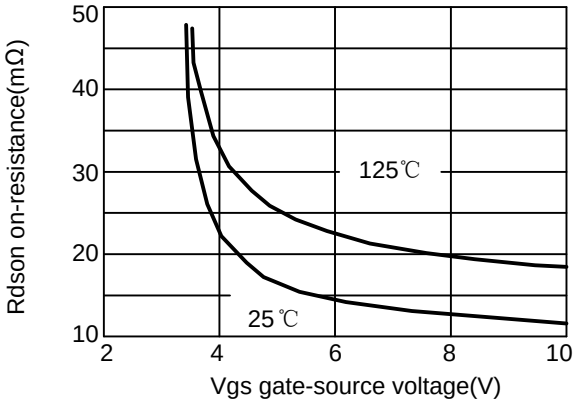


Figure5:rdson vs vgs

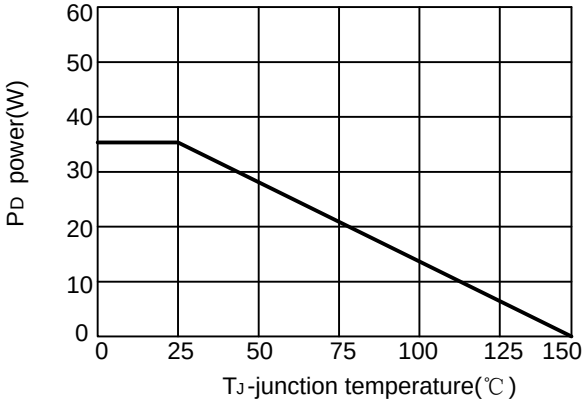


Figure6:power dissipation

■ N-MOS TYPICAL CHARACTERISTICS

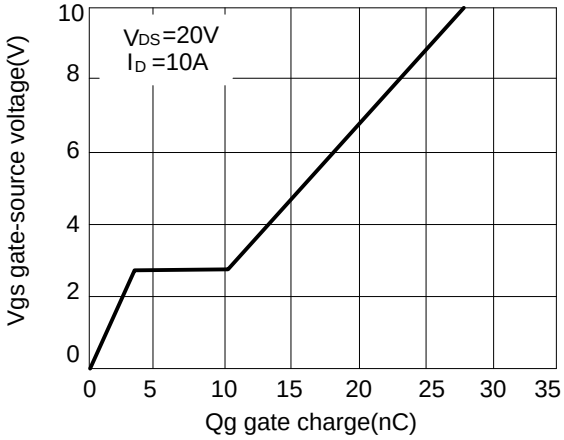


Figure7:gate charge

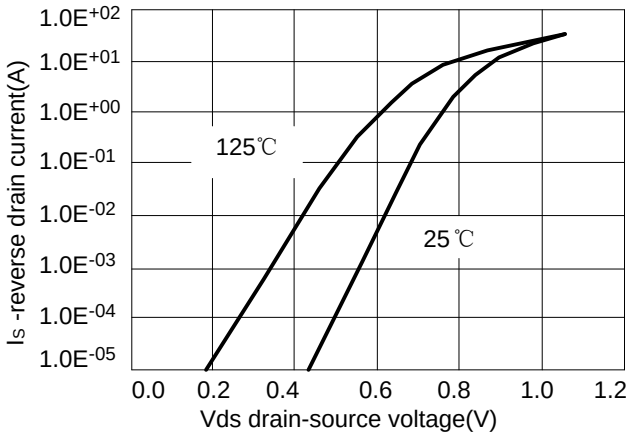


Figure8:source-drain diode forward

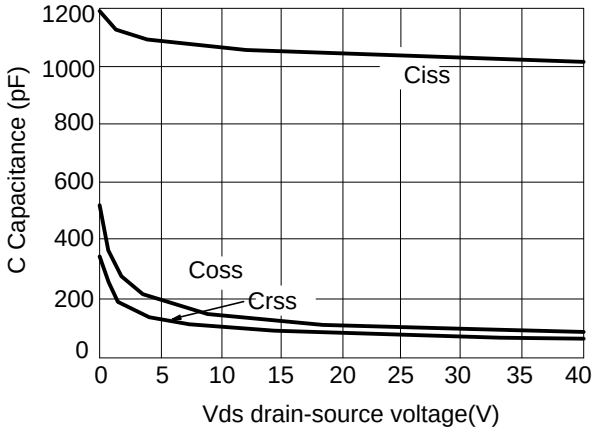


Figure9:capacitance vs vds

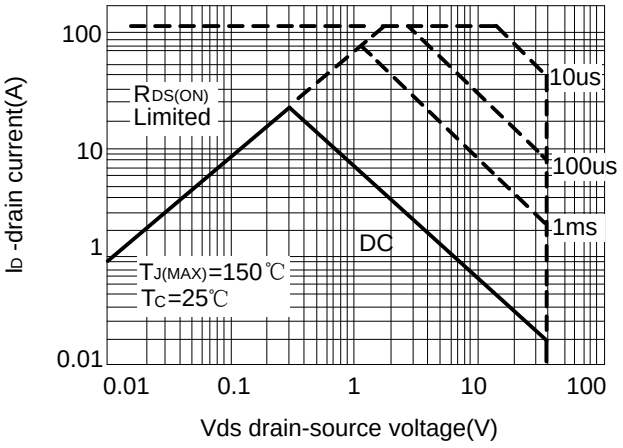


Figure10:safe operation area

■ P-MOS TYPICAL CHARACTERISTICS

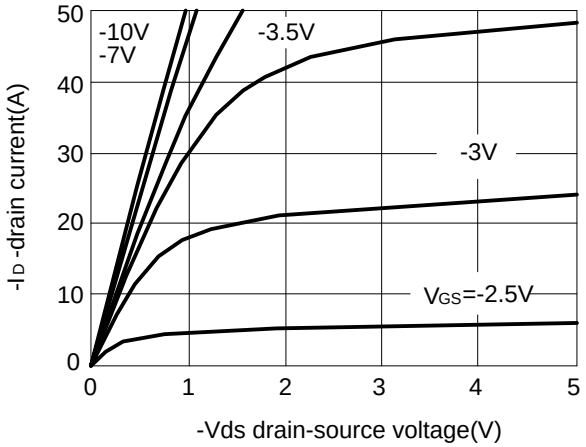


Figure1:output characteristics

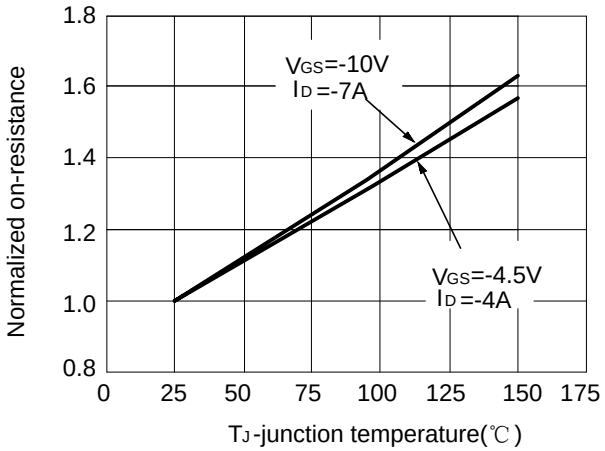


Figure2:drain-source on-resistance

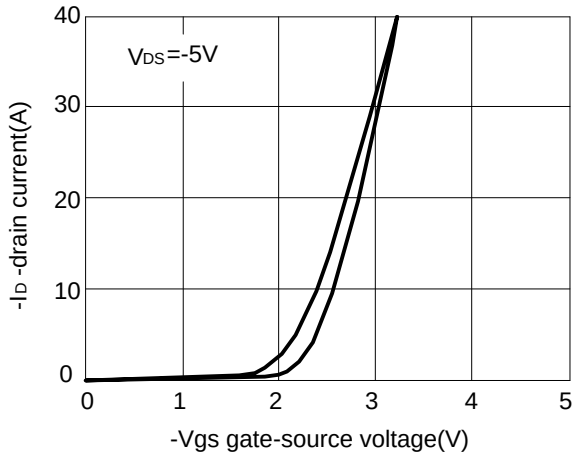


Figure3:transfer characteristics

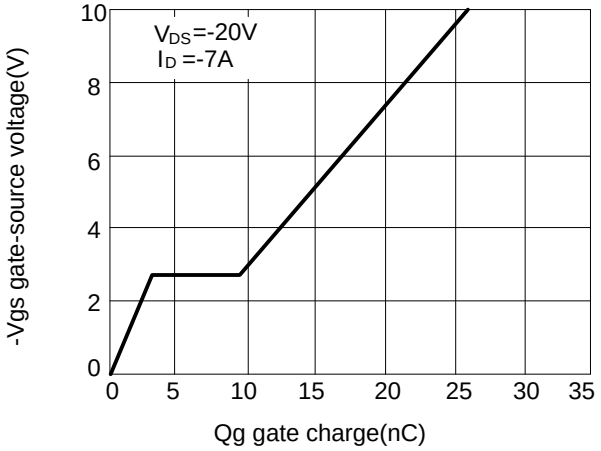


Figure4:gate charge

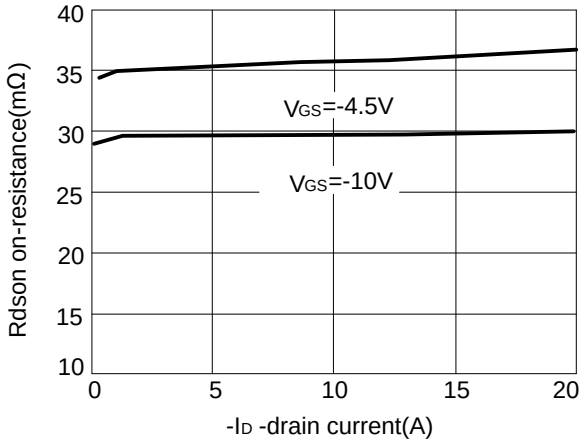


Figure5:drain-source on-resistance

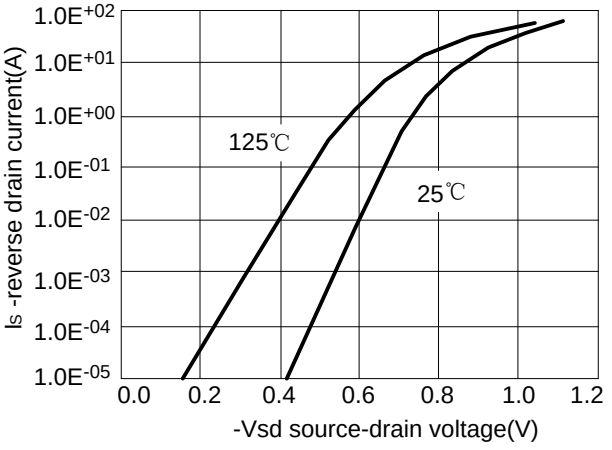


Figure6:source-drain diode forward

■ P-MOS TYPICAL CHARACTERISTICS(Cont.)

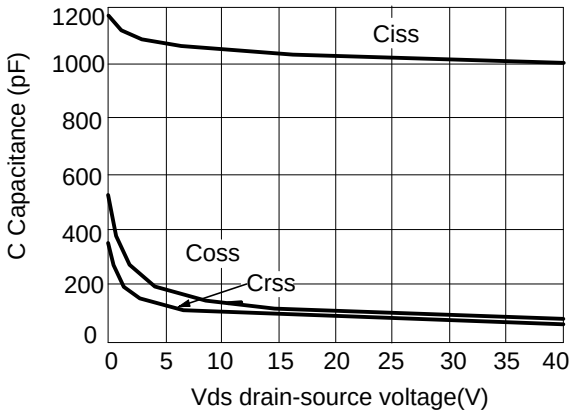


Figure7:capacitance vs vds

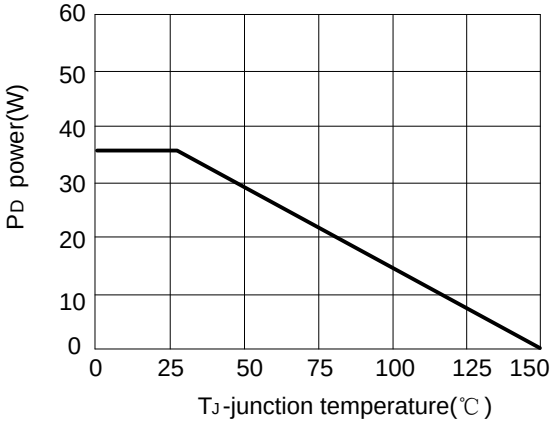


Figure8:power dissipation

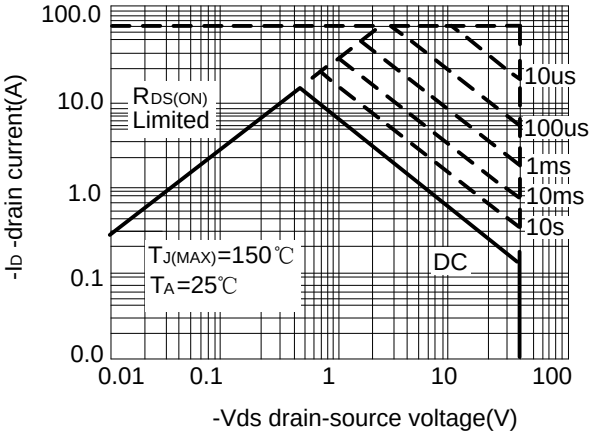


Figure9:Safe operation area

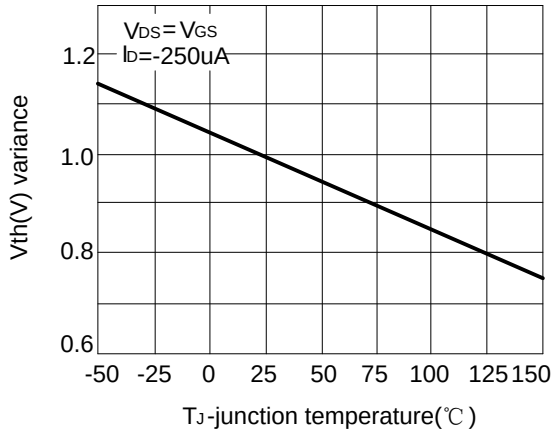
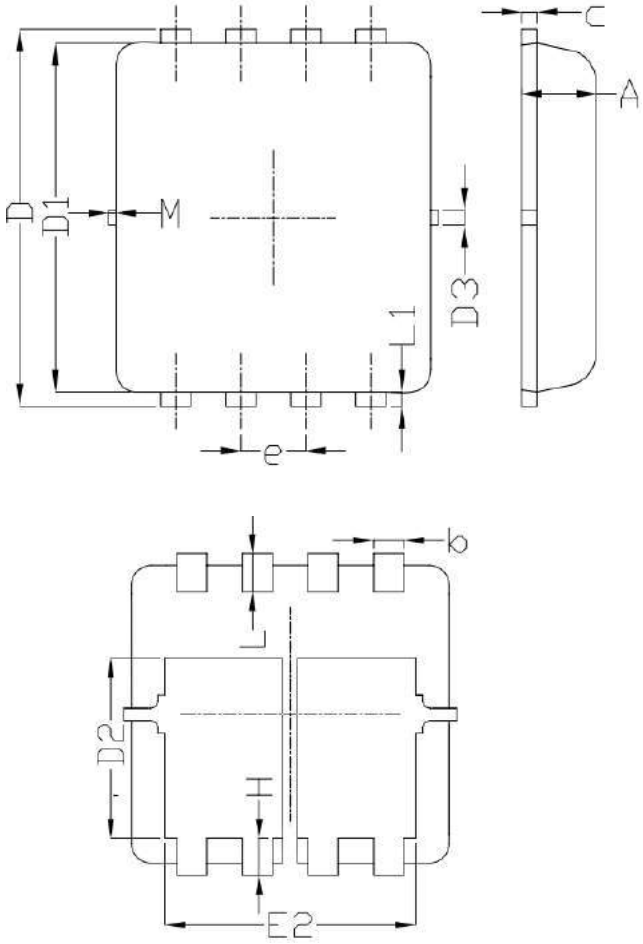
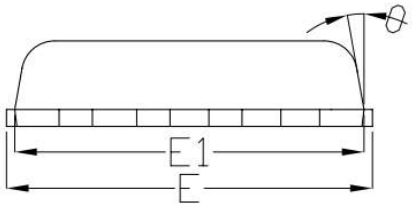


Figure10:power dissipation

■ PDFN3X3 Package Mechanical Data





SYMBOL	DIMENSIONAL REQMTS		
	MIN	NOM	MAX
A	0.70	0.75	0.80
b	0.25	0.30	0.35
c	0.10	0.15	0.25
D	3.25	3.35	3.45
D1	3.00	3.10	3.20
D2	1.78	1.88	1.98
D3	---	0.13	---
E	3.20	3.30	3.40
E1	3.00	3.15	3.20
E2	2.39	2.49	2.59
e	0.65BSC		
H	0.30	0.39	0.50
L	0.30	0.40	0.50
L1	---	0.13	---
θ	---	10°	12°
M	*	*	0.15
* Not specified			