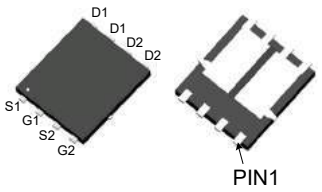
■ PRODUCT CHARACTERISTICS

N-Channel	P-Channel
BV_{DSS} = 40V	BV_{DSS} = -40V
$R_{DS(on)}$ (Typ@VGS= 10V) < 12mΩ	$R_{DS(on)}$(Typ@VGS= -10V) < 29mΩ
$R_{DS(on)}$ (Typ@VGS= 4.5V) < 17mΩ	$R_{DS(on)}$(Typ@VGS= -4.5V) < 34mΩ

Pin description

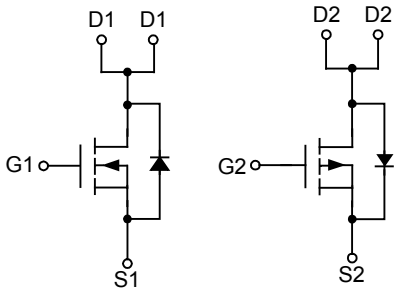


■ APPLICATIONS

- Motor Drive
- DC-DC Converter

■ FEATURES

- Advanced trench cell design
- Low thermal resistance



N+P MOSFET

■ ORDER INFORMATION

Order codes		Package	Packing
Halogen-free	Halogen		
N/A	MOT4633J	PDFN3X3-8L	5000pieces/Reel

■ ABSOLUTE MAXIMUM RATINGS(T_C=25℃ unless otherwise specified)

Parameter		Symbol	N-Channel	P-Channel	Unit
Drain-Source Voltage		V_{DS}	40	-40	V
Gate-Source Voltage		V_{GS}	±20	±20	V
Continuous Drain Current	T_C=25℃	I_D	28	-15	A
	T_C=100℃		19.8	-10.6	A
Pulsed Drain Current	T_C=25℃	I_{DM}	70	-60	A
Maximum Power Dissipation		P_D	35		W
Thermal Resistance,Junction-to-Case		$R_{\theta JC}$	3.6		℃/W
Operating Junction and Storage Temperature Range		T_J,T_{STG}	-55 To 150		℃

■ N-Channel Electrical Characteristics (T_C=25℃ unless otherwise specified)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V I_D=250μA	40	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=40V,V_{GS}=0V	-	-	1	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS}=±20V,V_{DS}=0V	-	-	±100	nA
On Characteristics						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=250μA	1.0	1.4	2.0	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=15A	-	12	17	mΩ
		V_{GS}=4.5V, I_D=10A	-	17	25	mΩ
Forward Transconductance	g_{FS}	V_{DS}=5V,I_D=15A	-	7	-	S
Dynamic Characteristics						
Input Capacitance	C_{lss}	V_{DS}=20V,V_{GS}=0V, F=1.0MHz	-	1163	-	PF
Output Capacitance	C_{oss}		-	104	-	PF
Reverse Transfer Capacitance	C_{rss}		-	100	-	PF
Switching Characteristics						
Turn-on Delay Time	$t_{d(on)}$	V_{DD}=20V ,R_L=2.5Ω V_{GS}=10V,R_G=3Ω	-	5.5	-	nS
Turn-on Rise Time	t_r		-	14	-	nS
Turn-Off Delay Time	$t_{d(off)}$		-	24	-	nS
Turn-Off Fall Time	t_f		-	12	-	nS
Total Gate Charge	Q_g	V_{DS}=20V,I_D=15A, V_{GS}=10V	-	28	-	nC
Gate-Source Charg	Q_{gs}		-	3.9	-	nC
Gate-Drain Charge	Q_{gd}		-	5.9	-	nC
Drain-Source Diode Characteristics						
Diode Forward Voltage	V_{SD}	V_{GS}=0V,I_S=15A	-	-	1.2	V
Diode Forward Current	I_S		-	-	28	A

■ N-TYPICAL CHARACTERISTICS

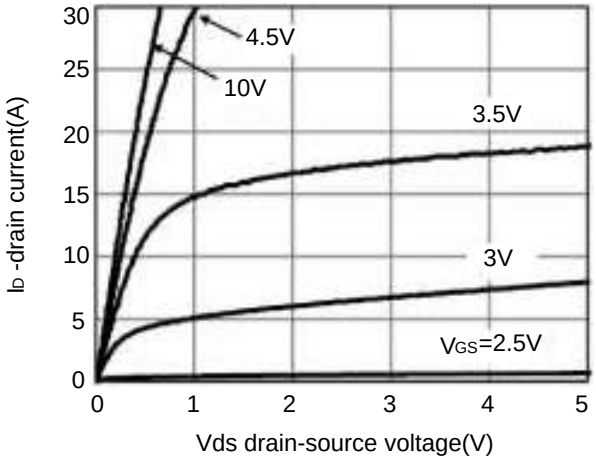


Figure1:output characteristics

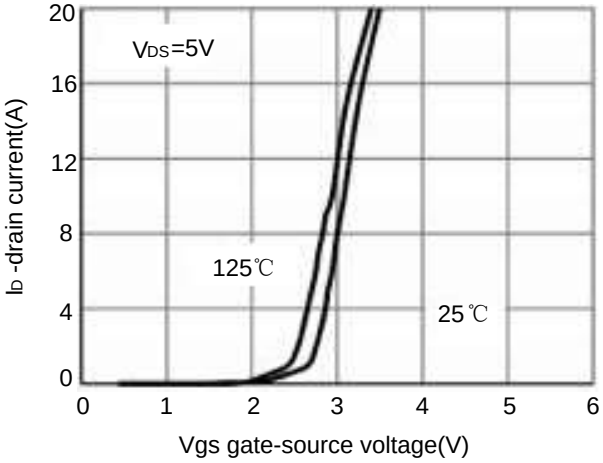


Figure2:transfer characteristics

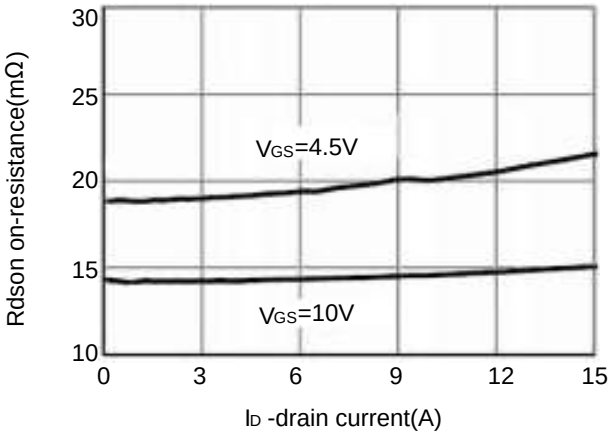


Figure3:drain-source on-resistance

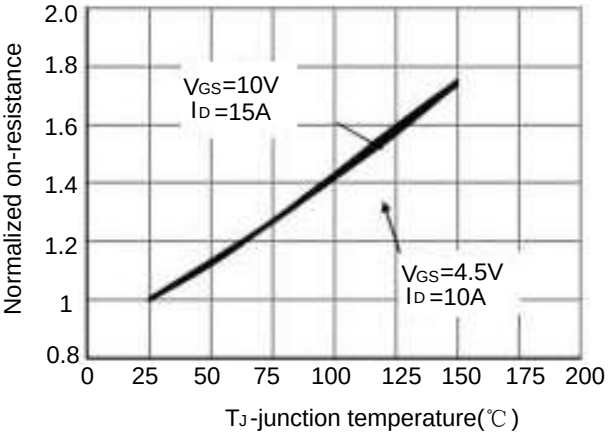


Figure4:drain-source on-resistance

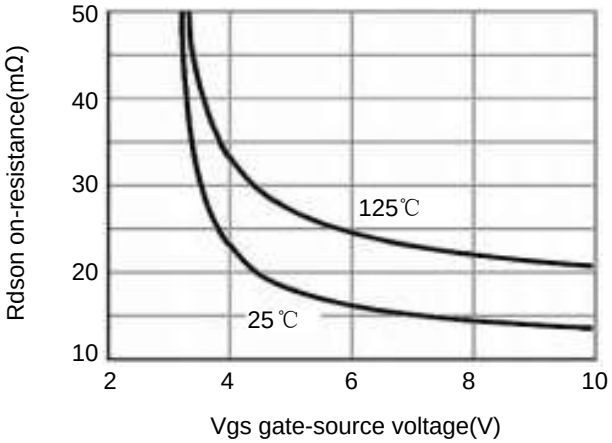


Figure5:rdson vs vgs

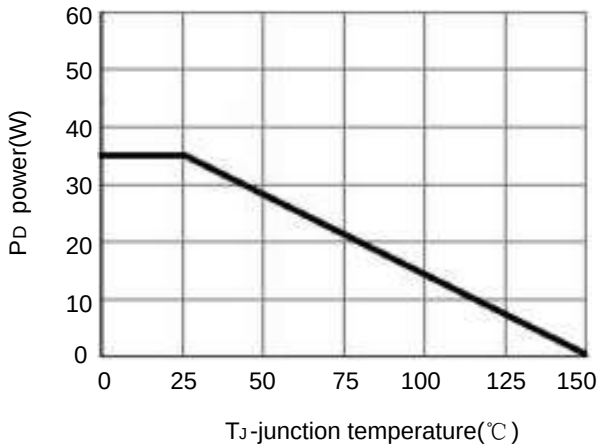


Figure6:power dissipation

■ N-TYPICAL CHARACTERISTICS(Cont.)

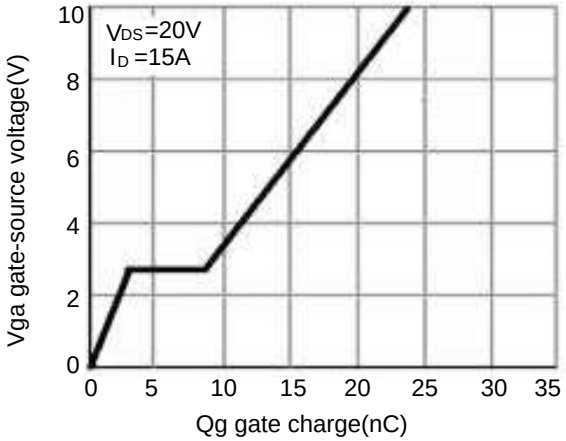


Figure7:gate charge

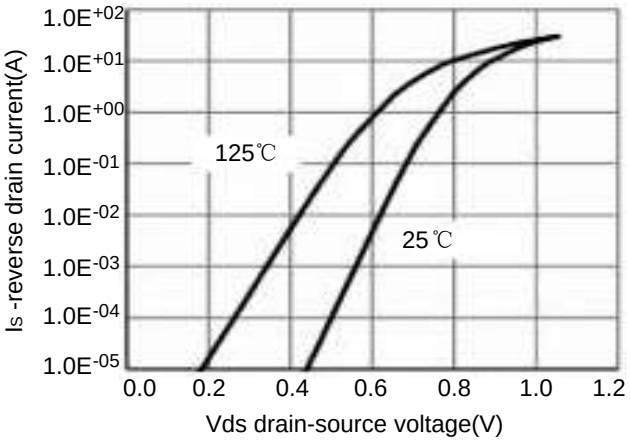


Figure8:source-drain diode forward

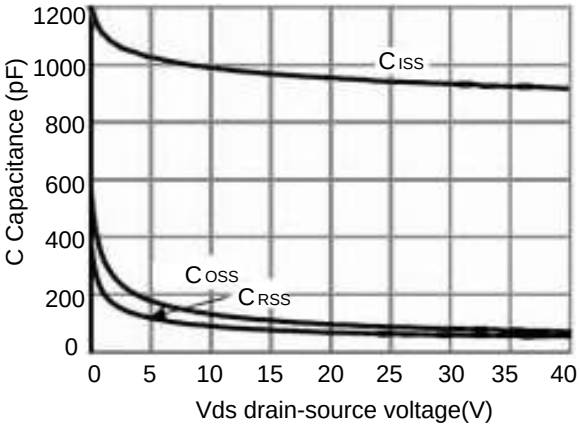


Figure9:capacitance vs vds

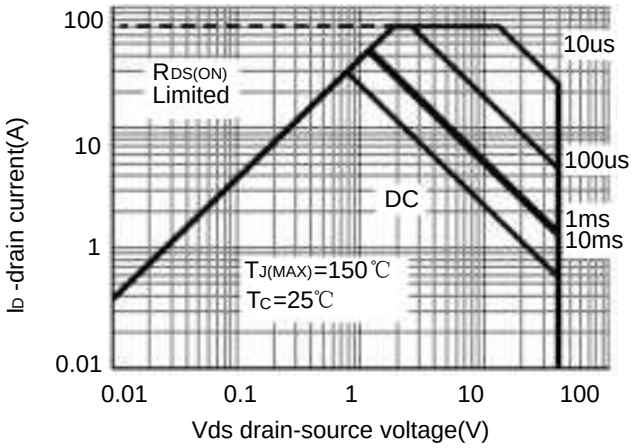


Figure10:safe operation area

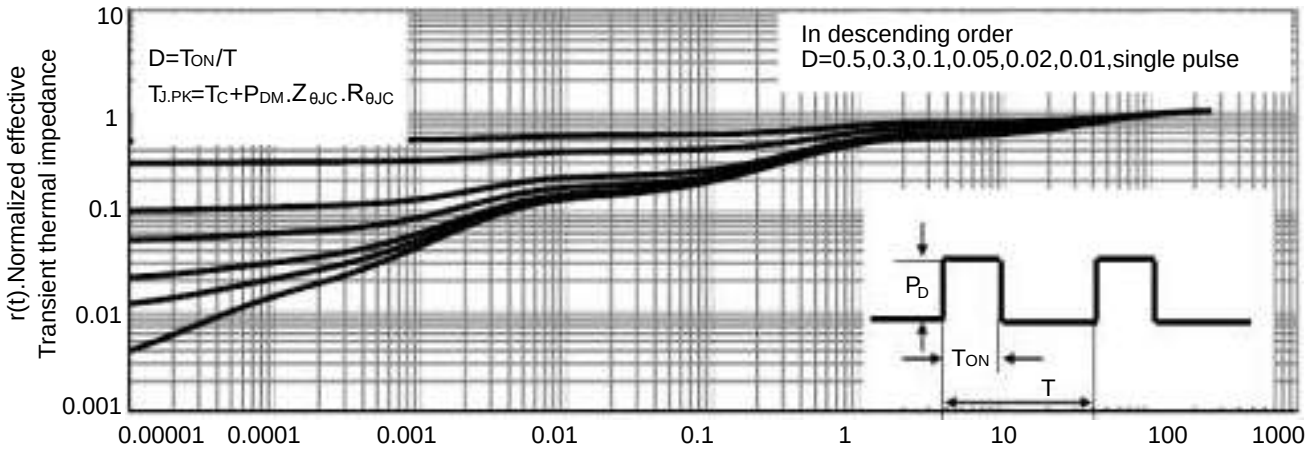


Figure 11 Normalized maximum transient thermal impedance

■ P-Channel Electrical Characteristics (T_C=25℃ unless otherwise specified)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V I_D=-250μA	-40	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-40V,V_{GS}=0V	-	-	-1	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS}=±20V,V_{DS}=0V	-	-	±100	nA
On Characteristics						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=-250μA	-1.0	-1.5	-2.0	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS}=-10V, I_D=-7A	-	29	35	mΩ
		V_{GS}=-4.5V, I_D=-4A	-	34	45	mΩ
Forward Transconductance	g_{FS}	V_{DS}=-5V,I_D=-7A	20	-	-	S
Dynamic Characteristics						
Input Capacitance	C_{lss}	V_{DS}=-20V,V_{GS}=0V, F=1.0MHz	-	1060	-	PF
Output Capacitance	C_{oss}		-	121	-	PF
Reverse Transfer Capacitance	C_{rss}		-	111	-	PF
Switching Characteristics						
Turn-on Delay Time	$t_{d(on)}$	V_{DD}=-20V, R_L=2.3Ω V_{GS}=-10V,R_{GEN}=6Ω	-	5.5	-	nS
Turn-on Rise Time	t_r		-	14	-	nS
Turn-Off Delay Time	$t_{d(off)}$		-	24	-	nS
Turn-Off Fall Time	t_f		-	12	-	nS
Total Gate Charge	Q_g	V_{DS}=-20V,I_D=-7A V_{GS}=-10V	-	26	-	nC
Gate-Source Charge	Q_{gs}		-	3.7	-	nC
Gate-Drain Charge	Q_{gd}		-	6.0	-	nC
Drain-Source Diode Characteristics						
Diode Forward Voltage	V_{SD}	V_{GS}=0V,I_S=-10A	-	-	1.2	V

■ P-TYPICAL CHARACTERISTICS

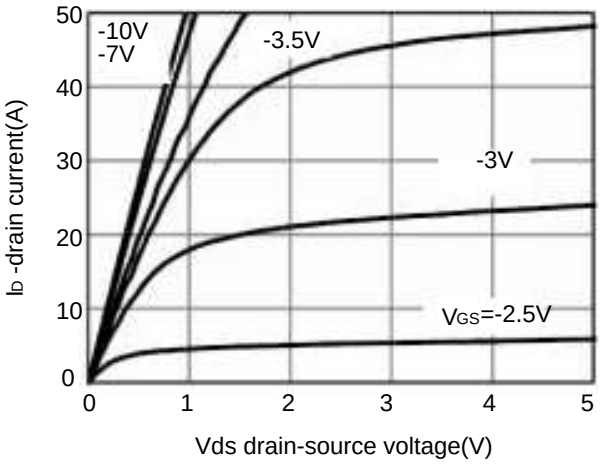


Figure1:output characteristics

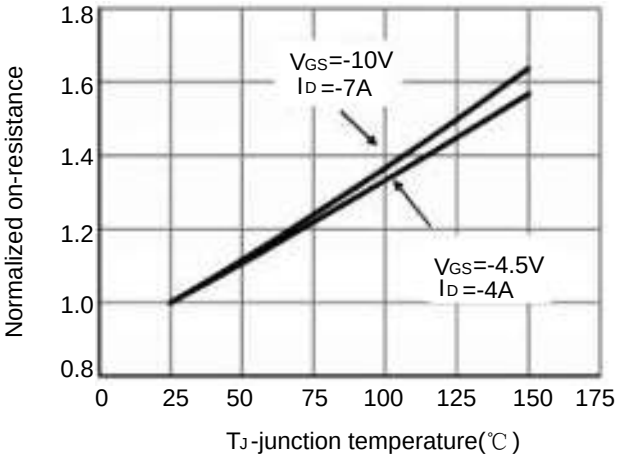


Figure2:drain-source on-resistance

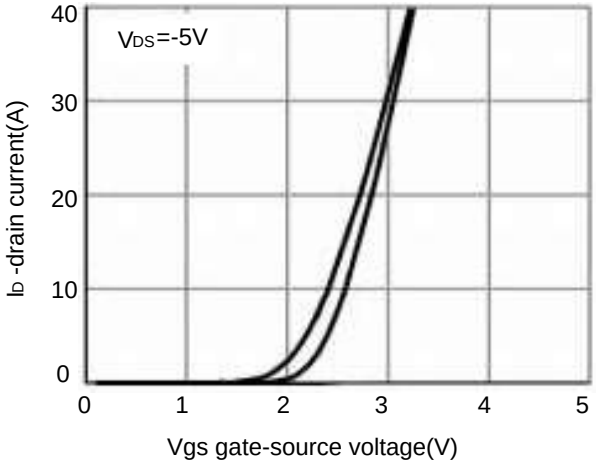


Figure3:transfer characteristics

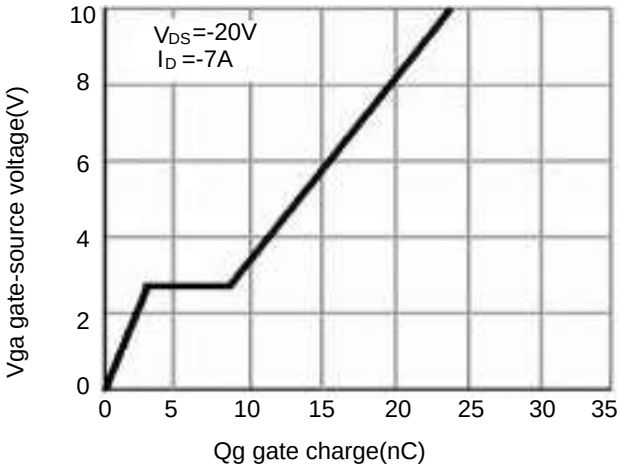


Figure4:gate charge

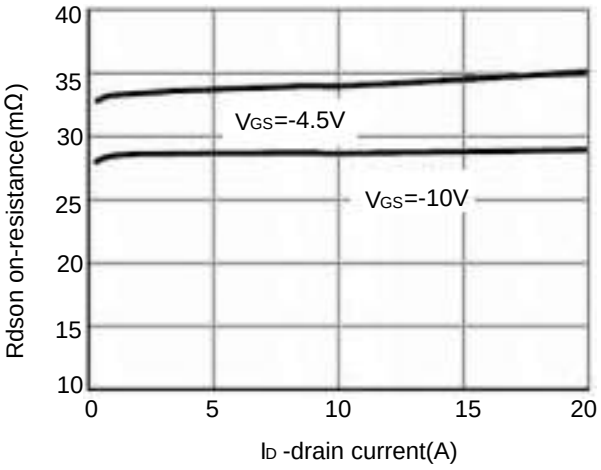
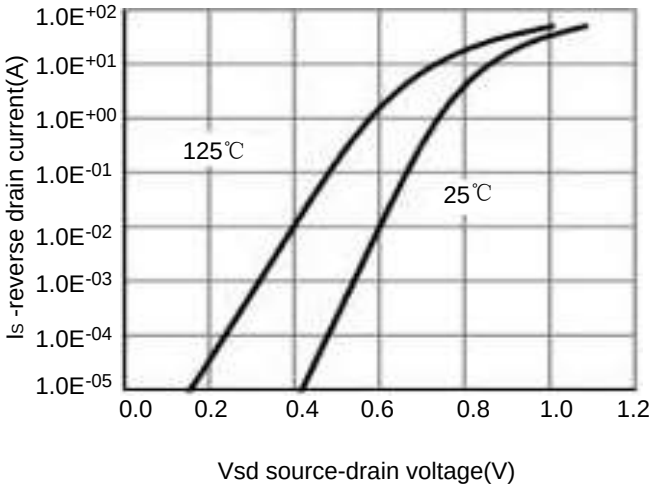


Figure3:drain-source on-resistance



■ P-TYPICAL CHARACTERISTICS(Cont.)

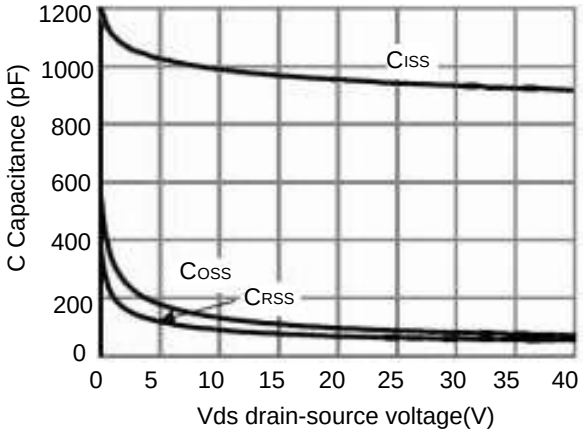


Figure7:capacitance vs vds

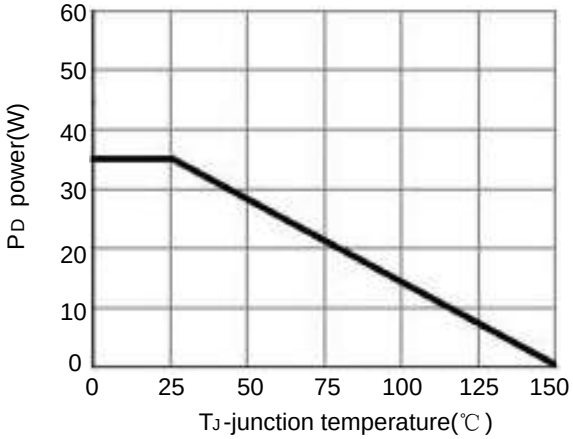


Figure8:power dissipation

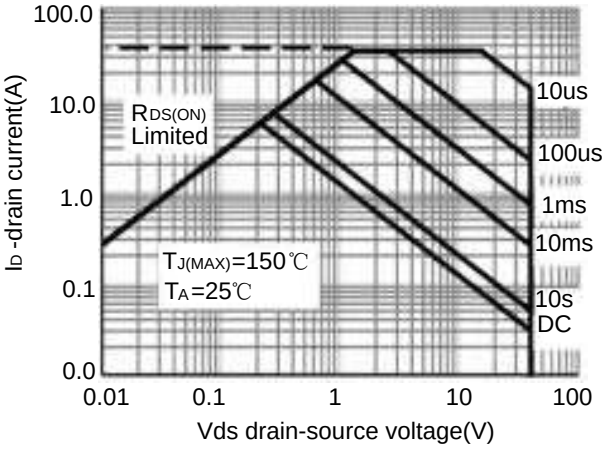


Figure9:Safe operation area

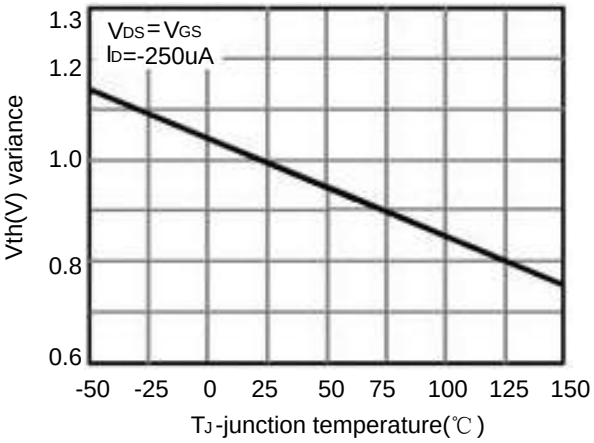


Figure8:power dissipation

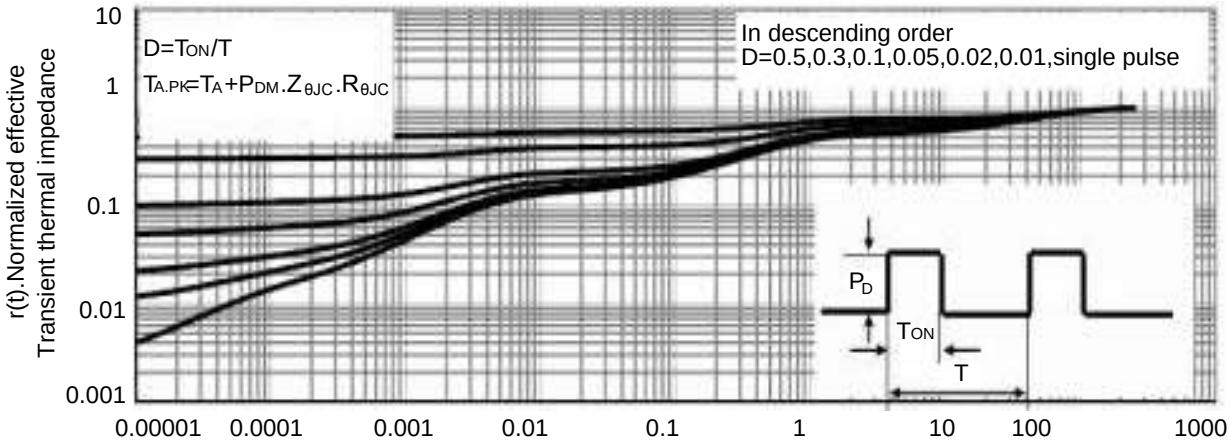
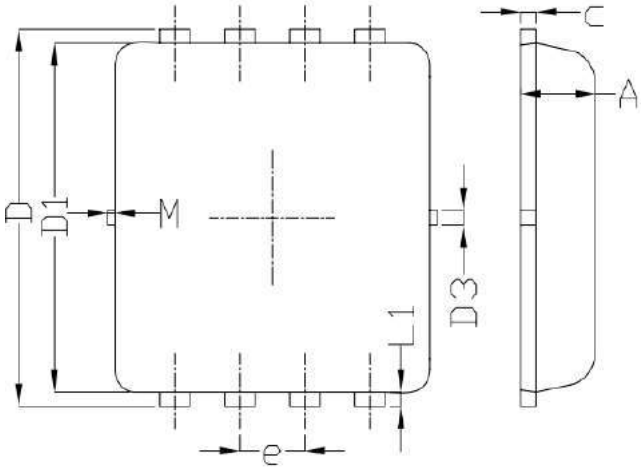
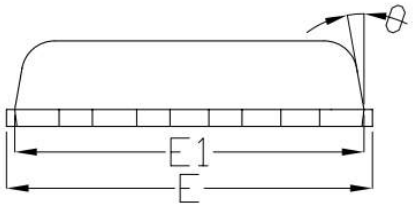
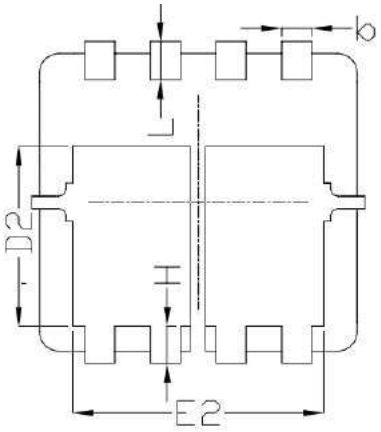


Figure 11 Normalized maximum transient thermal impedance

■ PDFN3X3-8L 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			