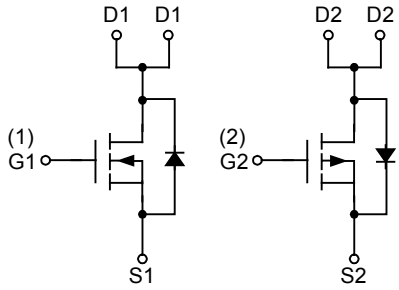
■ PRODUCT CHARACTERISTICS

N-CHANNEL MOSFET		P-CHANNEL MOSFET	
V_{DSS}	20V	V_{DSS}	-20V
$R_{DS(ON)}$ Typ(@V_{GS}=4.5V)	9.2mΩ	$R_{DS(ON)}$ Typ(@V_{GS}=-4.5V)	14mΩ
$R_{DS(ON)}$ Typ(@V_{GS}=2.5V)	12mΩ	$R_{DS(ON)}$ Typ(@V_{GS}=-2.5V)	19mΩ
I_D	20A	I_D	-20A

Symbol

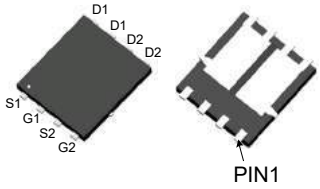


■ APPLICATIONS

* 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	MOT2620J	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}	20	-20	V
Gate-Source Voltage	V_{GSS}	±12	±12	V
Drain Current Continuous(@V_{GS}=±10V ,T_A=25°C)	I_D	20	-20	A
Drain Current Pulsed	I_{DM}	80	-80	A
Avalanche Energy	E_{AS}	81	72	mJ
Junction to Case	R_{thJC}	9.6		°C/W
Power Dissipation	P_D	13		W
Junction Temperature	T_J	+150		°C
Storage Temperature	T_{STG}	-55~ +150		°C

■ 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	20	-	-	V
Drain to Source Leakage Current	I_{DSS}	V_{DS}=20V,V_{GS}=0V	-	-	1	μA
Gate to Source Forward Leakage	$I_{GSS(F)}$	V_{GS}=+12V,V_{DS}=0V	-	-	100	nA
Gate to Source Reverse Leakage	$I_{GSS(R)}$	V_{GS}=-12V ,V_{DS}=0V	-	-	-100	nA
On characteristics						
Drain to Source On-Resistance	$R_{DS(ON)}$	V_{GS}=4.5V,I_D=10A	-	9.2	13	mΩ
		V_{GS}=2.5V,I_D=5 A	-	12	15	mΩ
Gate Threshold Voltage	$V_{GS(TH)}$	V_{DS}=V_{GS},I_D=250μA	0.4	0.72	1	V
Dynamic characteristics						
Gate Resistance	R_g	V_{GS}=0V,V_{DS}=0V ,f=1.0MHz	-	1.6	-	Ω
Forward Transconductance	g_{fs}	V_{DS}=5V,I_D=5A	-	13	-	S
Input Capacitance	C_{iss}	V_{DS}=10V,V_{GS}=0V f=1.0MHz	-	704	-	pF
Output Capacitance	C_{oss}		-	120	-	pF
Reverse Transfer Capacitance	C_{rss}		-	82	-	pF
Resistive Switching Characteristics						
Turn-on Delay Time	$t_{d(ON)}$	V_{GS}=4.5V,V_{DS}=10V, I_D=10 A,R_G=3Ω	-	9	-	ns
Rise Time	t_r		-	32	-	ns
Turn-off Delay Time	$t_{d(OFF)}$		-	37	-	ns
Fall Time	t_f		-	15	-	ns
Total Gate Charge	Q_g	I_D=10 A, V_{DS}=15V V_{GS}=4.5V	-	17	-	nC
Gate to Source Charge	Q_{gs}		-	4	-	nC
Gate to Drain("Miller") Charge	Q_{gd}		-	4.7	-	nC
Source-Drain Diode Characteristics						
Continuous Source Current(Body Diode)	I_S		-	-	20	A
Maximum Pulsed Current(Body Diode)	I_{SM}		-	-	80	A
Diode Forward Voltage	V_{SD}	I_{SD}=1A, V_{GS}=0V	-	0.72	1.2	V

■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	-20	-	-	V
Drain to Source Leakage Current	I_{DSS}	V_{DS}=-20V,V_{GS}=0V	-	-	-1	μA
Gate to Source Forward Leakage	$I_{GSS(F)}$	V_{GS}=+12V,V_{DS}=0V	-	-	100	nA
Gate to Source Reverse Leakage	$I_{GSS(R)}$	V_{GS}=-12V ,V_{DS}=0V	-	-	-100	nA
On characteristics						
Drain to Source On-Resistance	$R_{DS(ON)}$	V_{GS}=-4.5V,I_D=-10A	-	14	20	mΩ
		V_{GS}=-2.5V,I_D=-5A	-	19	24	mΩ
Gate Threshold Voltage	$V_{GS(TH)}$	V_{DS}=V_{GS},I_D=-250μA	-0.4	-0.6	-1	V
Dynamic characteristics						
Gate Resistance	R_g	V_{GS}=0V,V_{DS}=0V ,f=1.0MHz	-	11	-	Ω
Forward Transconductance	g_{fs}	V_{DS}=-5V,I_D=-5A	-	14	-	S
Input Capacitance	C_{iss}	V_{DS}=-10V,V_{GS}=0V f=1.0MHz	-	654	-	pF
Output Capacitance	C_{oss}		-	98	-	pF
Reverse Transfer Capacitance	C_{rss}		-	54	-	pF
Resistive Switching Characteristics						
Turn-on Delay Time	$t_{d(ON)}$	V_{GS}=-4.5V,V_{DS}=-10V, I_D=-10A,R_G=2.4Ω	-	14	-	ns
Rise Time	t_r		-	79	-	ns
Turn-off Delay Time	$t_{d(OFF)}$		-	58	-	ns
Fall Time	t_f		-	76	-	ns
Total Gate Charge	Q_g	I_D=-10A, V_{DS}=-10V V_{GS}=-4.5V	-	16	-	nC
Gate to Source Charge	Q_{gs}		-	3	-	nC
Gate to Drain("Miller") Charge	Q_{gd}		-	4	-	nC
Source-Drain Diode Characteristics						
Continuous Source Current(Body Diode)	I_S		-	-	-20	A
Maximum Pulsed Current(Body Diode)	I_{SM}		-	-	-80	A
Diode Forward Voltage	V_{SD}	I_{SD}=-1A, V_{GS}=0V	-	-0.73	-1.2	V

N-MOS TYPICAL CHARACTERISTICS

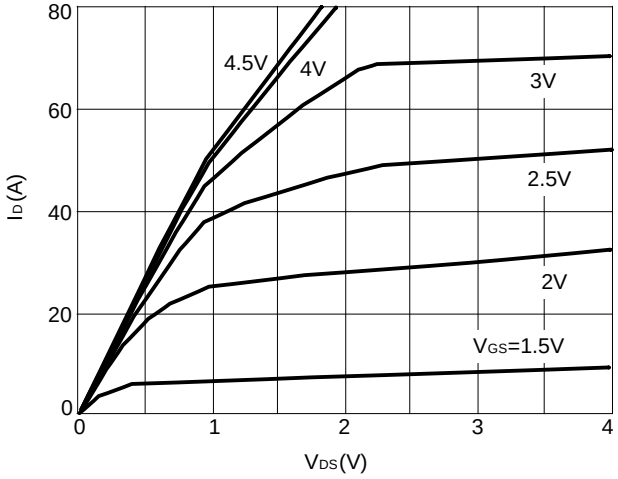


Figure 1: Output Characteristics

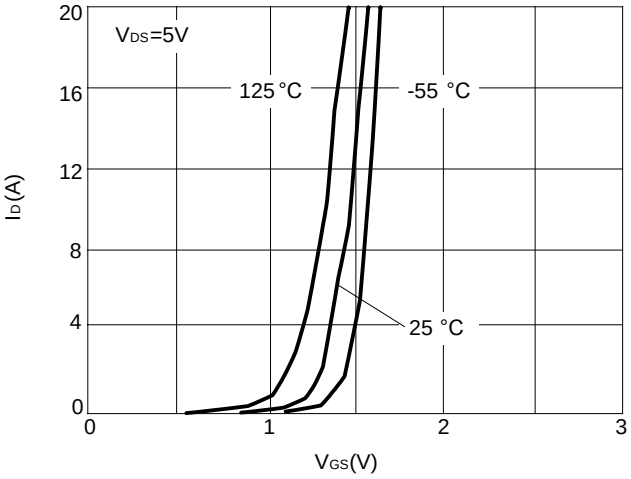


Figure 2: Typical Transfer Characteristics

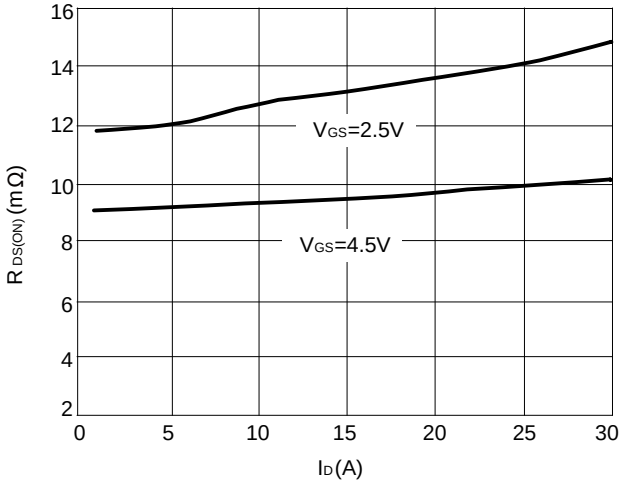


Figure 3: On-resistance vs. Drain Current

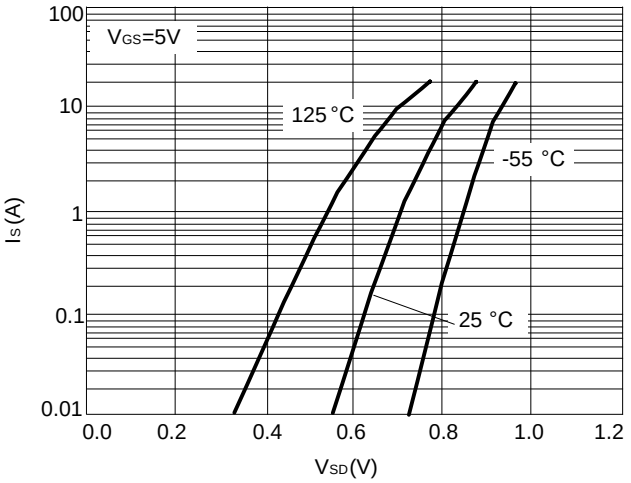


Figure 4: Body Diode Characteristics

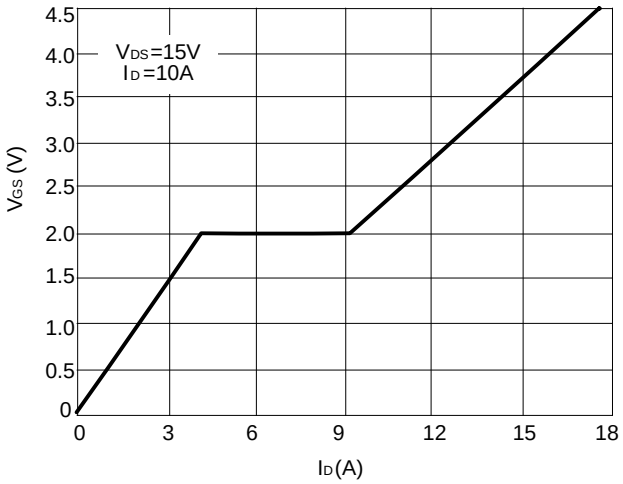


Figure 5: Gate Charge Characteristics

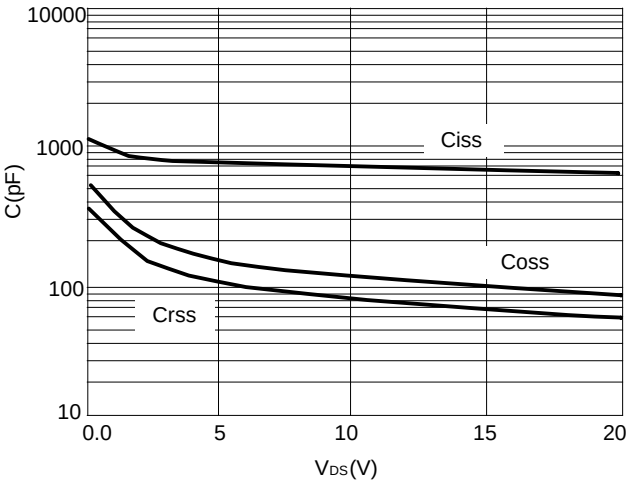


Figure 6: Capacitance Characteristics

■ N-MOS TYPICAL CHARACTERISTICS(Cont.)

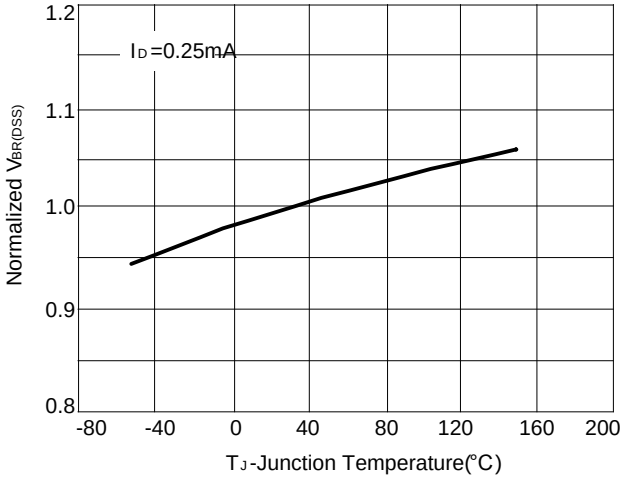


Figure 7: Normalized Vreakdown voltage vs Junction Temperature

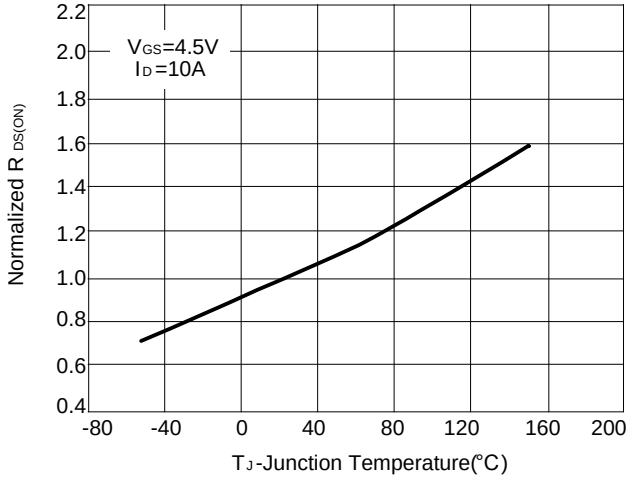


Figure 8: Normalized On-Resistance vs Junction Temperature

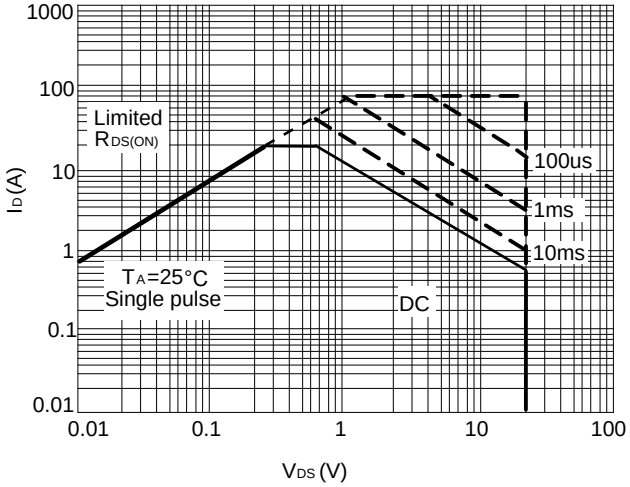


Figure 9: Maximum Safe Operating Area

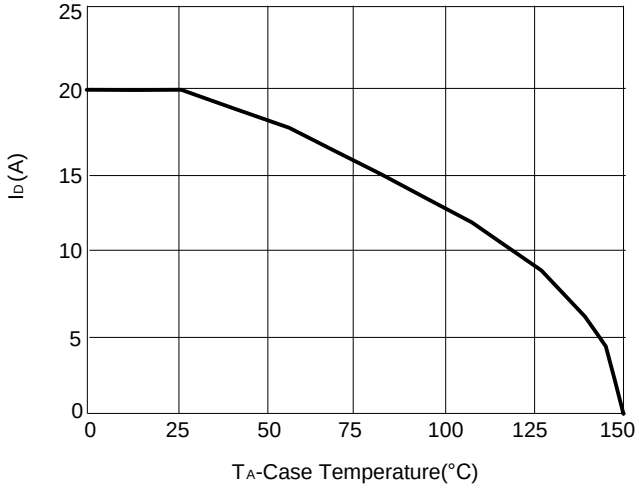


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

■P-MOS TYPICAL CHARACTERISTICS

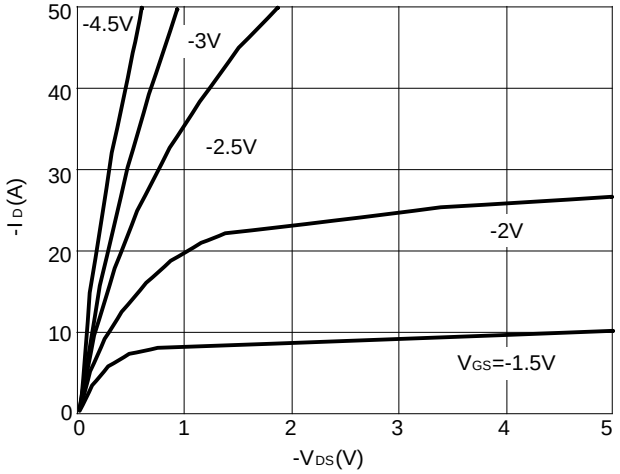


Figure 1: Output Characteristics

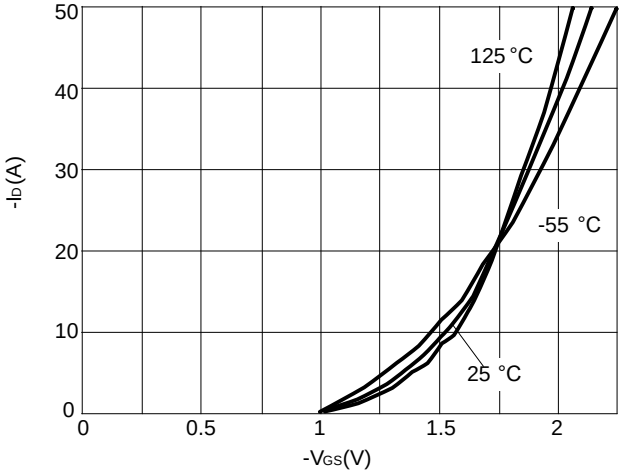


Figure 2: Typical Transfer Characteristics

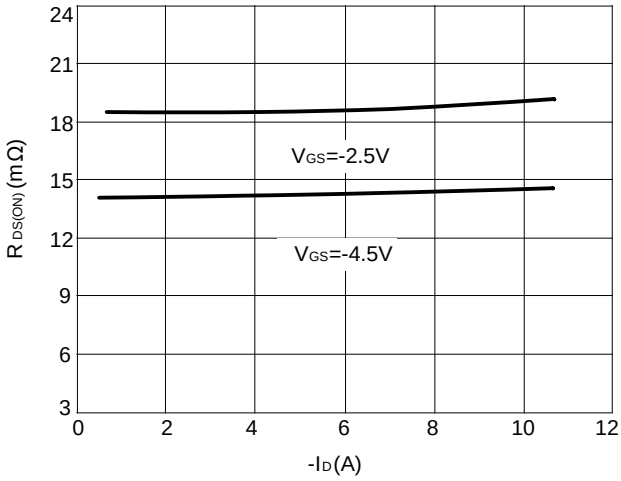


Figure 3: On-resistance vs. Drain Current

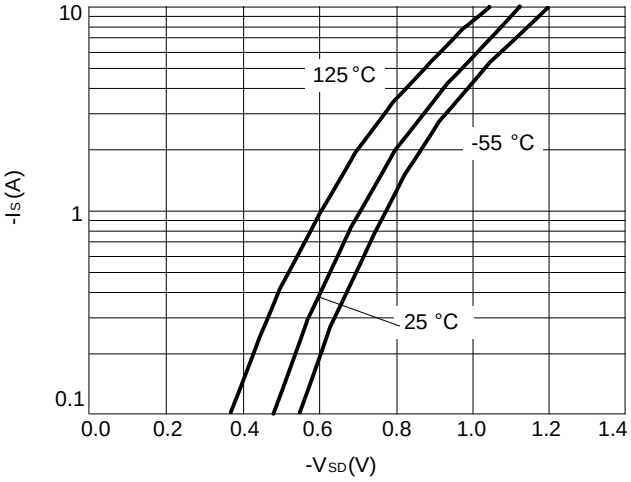


Figure 4: Body Diode Characteristics

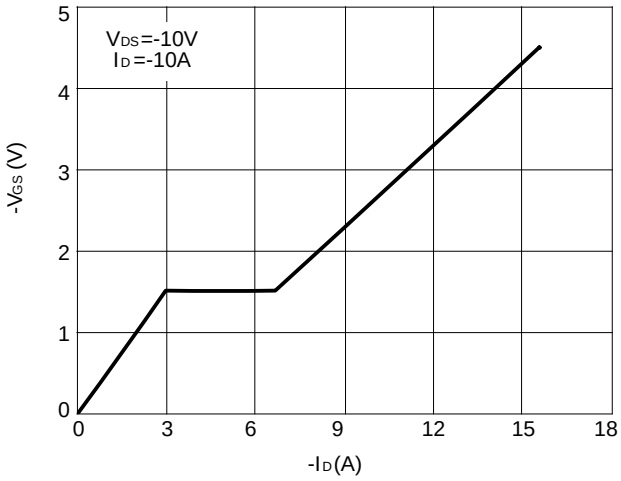


Figure 5: Gate Charge Characteristics

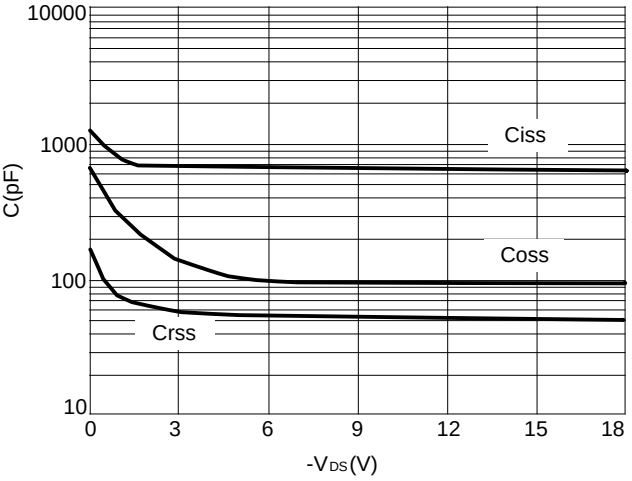


Figure 6: Capacitance Characteristics

■ P-MOS TYPICAL CHARACTERISTICS(Cont.)

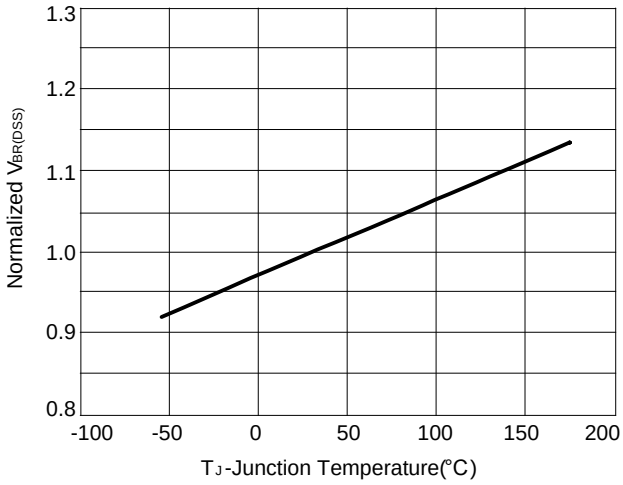


Figure 7: Normalized Breakdown voltage vs Junction Temperature

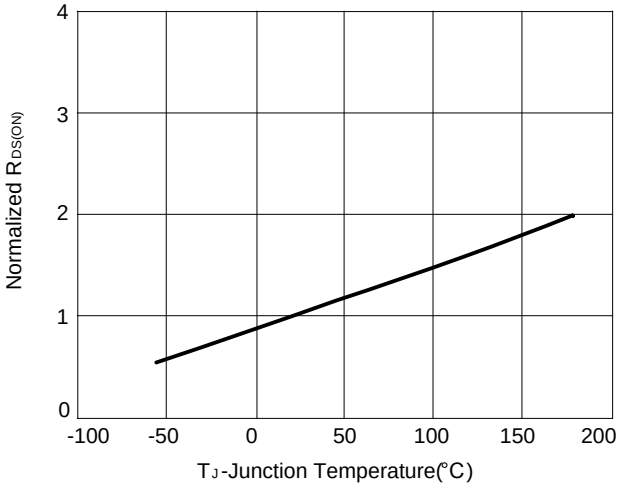


Figure 8: Normalized On-Resistance vs Junction Temperature

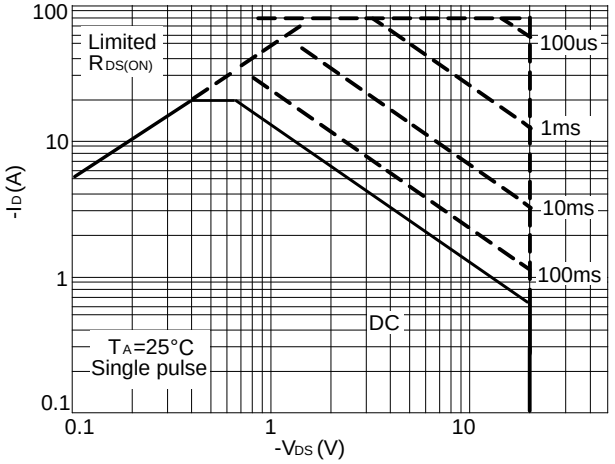


Figure 9: Maximum Safe Operating Area

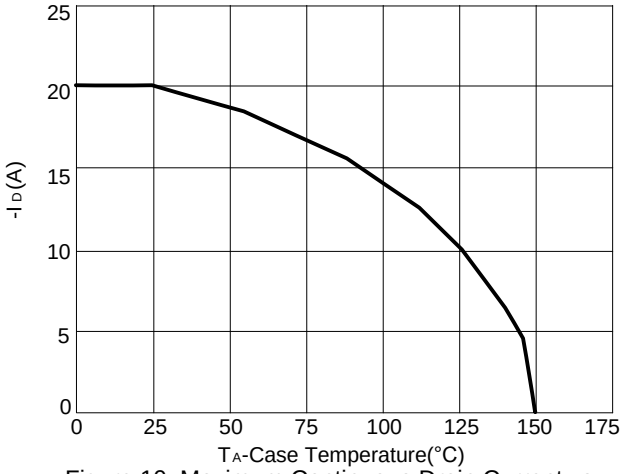
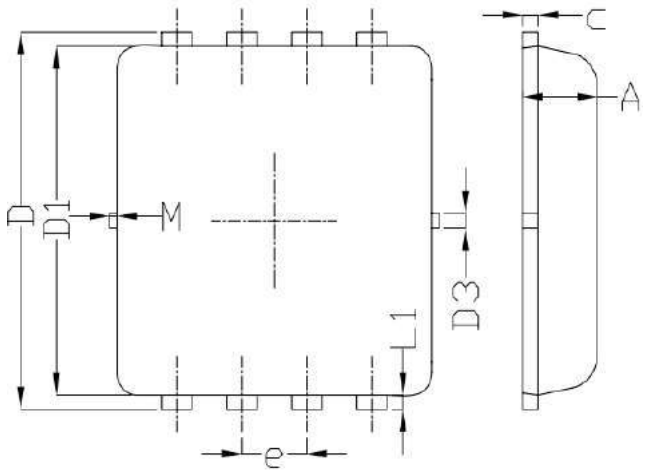
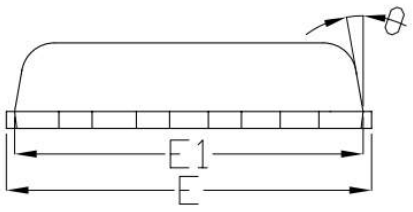
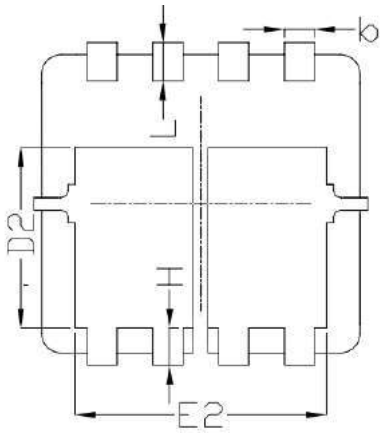


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

■ 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			