

PRODUCT CHARACTERISTICS

N-CHANNEL		P-CHANNEL	
V _{DSS}	30V	V _{DSS}	-30V
R _{DS(ON)} Typ(@V _{GS} =10V)	10mΩ	R _{DS(ON)} Typ(@V _{GS} =-10V)	19mΩ
R _{DS(ON)} Typ(@V _{GS} =4.5V)	15mΩ	R _{DS(ON)} Typ(@V _{GS} =-4.5V)	32mΩ
I _D	25A	I _D	-19A

APPLICATIONS

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

FEATURE

- * Low Gate Charge
- * Pb-Free Lead Plating



ORDER INFORMATION

Order Codes		Package	Packing
Halogen-Free	Halogen		
N/A	MOT3628J	PDFN3X3	5000 pieces/Reel

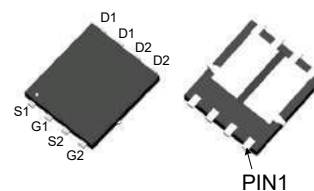
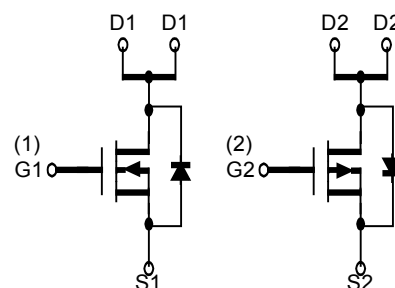
ABSOLUTE MAXIMUM RATINGS(T_A=25°C, unless otherwise specified)

Parameter	Symbol	N-channel	P-channel	Unit
Drain-Source Voltage	V _{DSS}	30	-30	V
Gate-Source Voltage	V _{GSS}	±20	±20	V
Drain Current Continuous(@V _{GS} =10V, T _A =25°C)	I _D	25	-19	A
Drain Current Pulsed	I _{DM}	100	-76	A
Avalanche Energy	E _{AS}	56	64	mJ
Power Dissipation	P _D	21		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}	5.95	°C/W

Symbol



■ 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	30	-	-	V
Drain to Source Leakage Current	I _{DSS}	V _{DS} =30V,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 =10A	-	10	13	mΩ
		V _{GS} =4.5V,I _D =10A	-	15	20	mΩ
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} =V _{GS} ,I _D =250μA	1	1.5	2.5	V
Dynamic characteristics						
Gate Resistance	R _g	V _{GS} =0V,V _{DS} =0V ,f=1.0MHz	-	2.0	-	Ω
Forward Transconductance	g _{fs}	V _{DS} =10V,I _D =3A	-	6.6	-	S
Input Capacitance	C _{iss}	V _{DS} =20V,V _{GS} =0V f=1.0MHz	-	734	-	pF
Output Capacitance	C _{oss}		-	70	-	pF
Reverse Transfer Capacitance	C _{rss}		-	60	-	pF
Resistive Switching Characteristics						
Turn-on Delay Time	t _{d(ON)}	V _{GS} =10V, V _{DS} =15V, I _D =-6 A,R _G =3Ω	-	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	I _D =6 A, V _{DS} =15V V _{GS} =10V	-	9.5	-	nC
Gate to Source Charge	Q _{gs}		-	2.6	-	nC
Gate to Drain("Miller") Charge	Q _{gd}		-	1.9	-	nC
Source-Drain Diode Characteristics						
Continuous Source Current(Body Diode)	I _s		-	-	25	A
Maximum Pulsed Current(Body Diode)	I _{SM}		-	-	100	A
Diode Forward Voltage	V _{SD}	I _{SD} =1A, V _{GS} =0V	-	0.75	1.2	V

■ P-MOS ELECTRICAL CHARACTERISTICS ($T_c=25^{\circ}\text{C}$, 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	-30	-	-	V
Drain to Source Leakage Current	I _{DSS}	V _{DS} =-30V,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 =-10A	-	19	25	mΩ
		V _{GS} =-4.5V,I _D =-4 A	-	32	38	mΩ
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} =V _{GS} ,I _D =-250μA	-1	-1.6	-2.5	V
Dynamic characteristics						
Gate Resistance	R _g	V _{GS} =0V,V _{DS} =0V ,f=1.0MHz	-	16.7	-	Ω
Forward Transconductance	g _{fs}	V _{DS} =-10V,I _D =-3A	-	6.5	-	S
Input Capacitance	C _{iss}	V _{DS} =-15V,V _{GS} =0V f=1.0MHz	-	691	-	pF
Output Capacitance	C _{oss}		-	100	-	pF
Reverse Transfer Capacitance	C _{rss}		-	90	-	pF
Resistive Switching Characteristics						
Turn-on Delay Time	t _{d(ON)}	V _{GS} =-10V,V _{DS} =-15V, I _D =-6 A ,R _G =3 Ω	-	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	I _D =-6 A, V _{DS} =-20V V _{GS} =-10V	-	16.2	-	nC
Gate to Source Charge	Q _{gs}		-	2.9	-	nC
Gate to Drain("Miller") Charge	Q _{gd}		-	3.6	-	nC
Source-Drain Diode Characteristics						
Continuous Source Current(Body Diode)	I _s		-	-	-19	A
Maximum Pulsed Current(Body Diode)	I _{SM}		-	-	- 76	A
Diode Forward Voltage	V _{SD}	I _{SD} =-1A, V _{GS} =0V	-	-0.76	-1.2	V

■ N-MOS TYPICAL CHARACTERISTICS(Cont.)

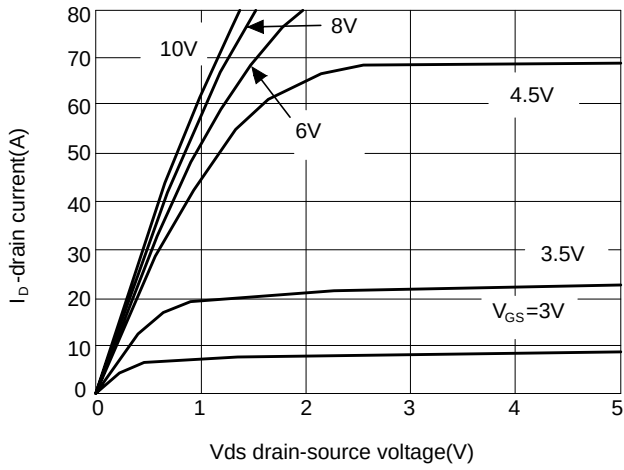


Figure 1: Output characteristics

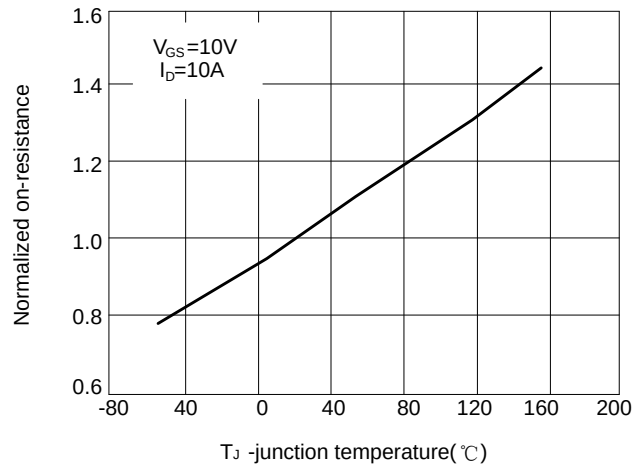


Figure 2: $R_{DS(on)}$ -junction temperature

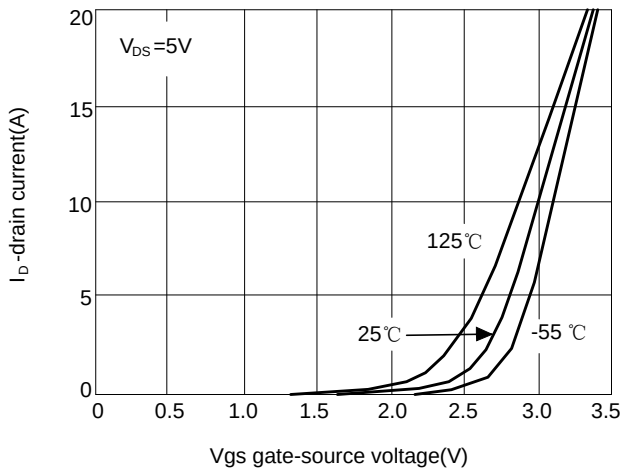


Figure 3: Transfer characteristics

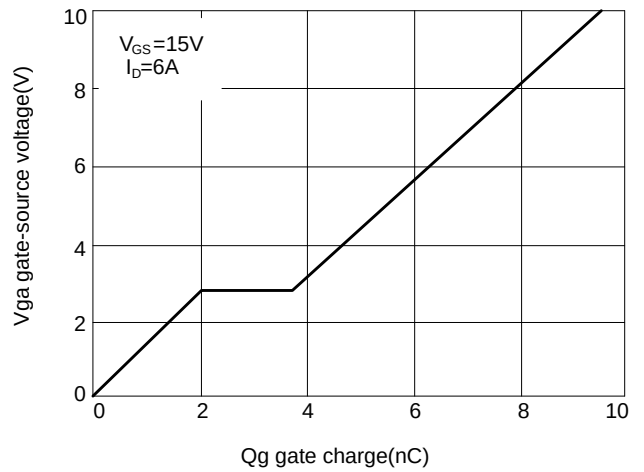


Figure 4: Gate charge

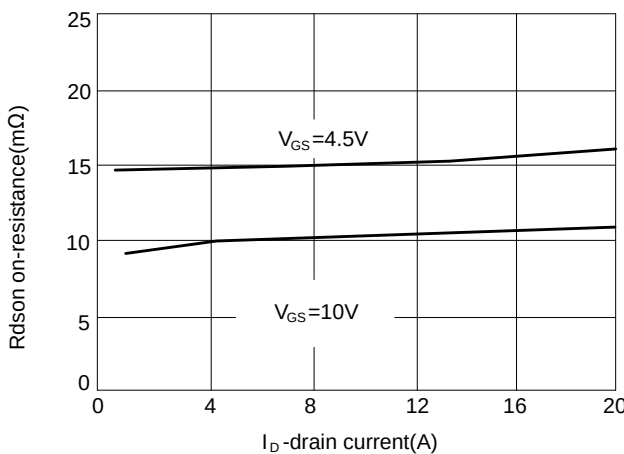


Figure 5: $R_{DS(on)}$ drain current

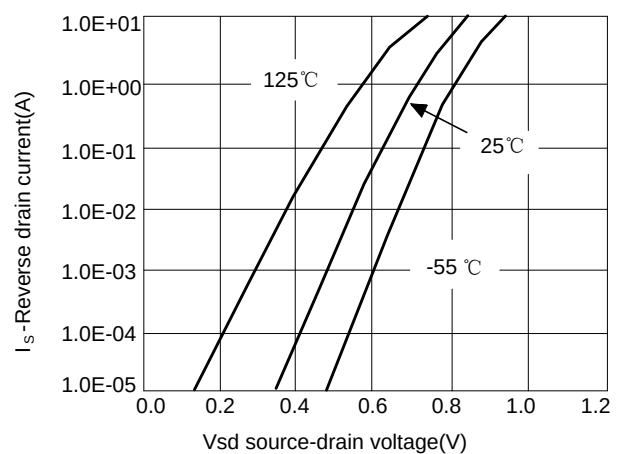


Figure 6: Source-drain diode forward

■ N-MOS TYPICAL CHARACTERISTICS

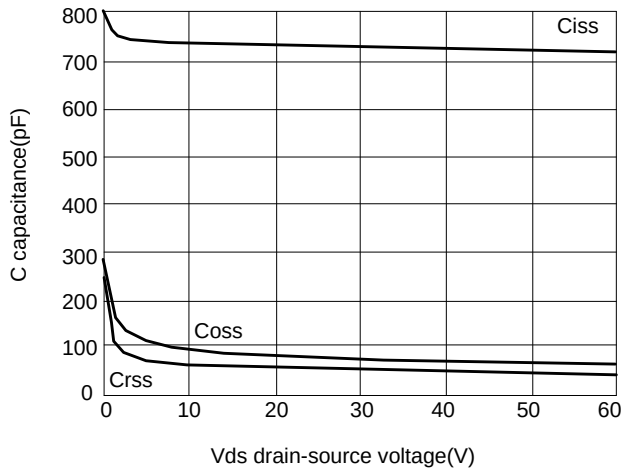


Figure 7: Capacitance vs. vds

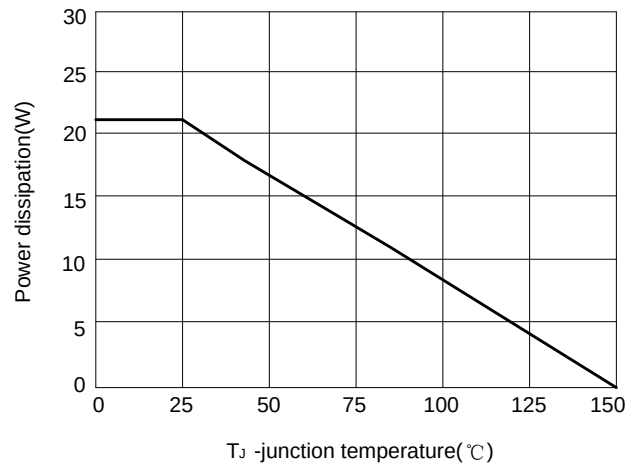


Figure 8: Power de-rating

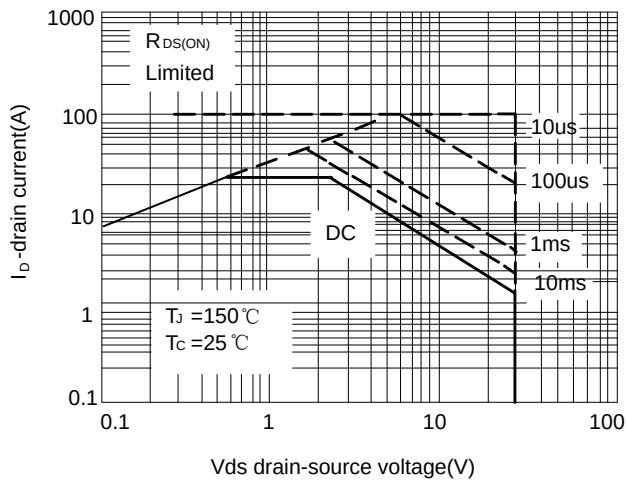


Figure 9: Safe operation area

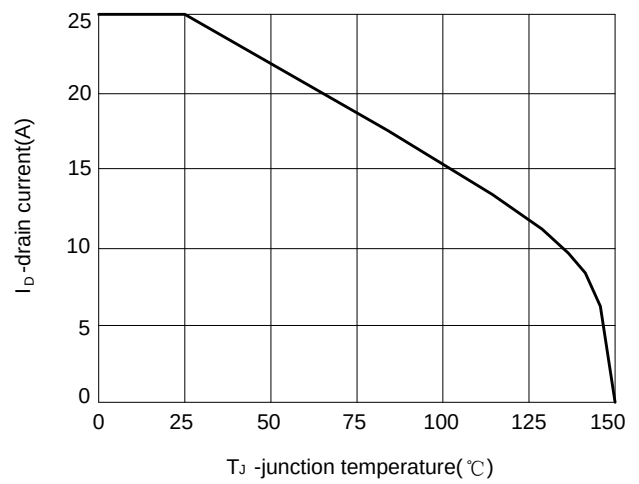


Figure 10: Current de-rating

■ P-MOS TYPICAL CHARACTERISTICS

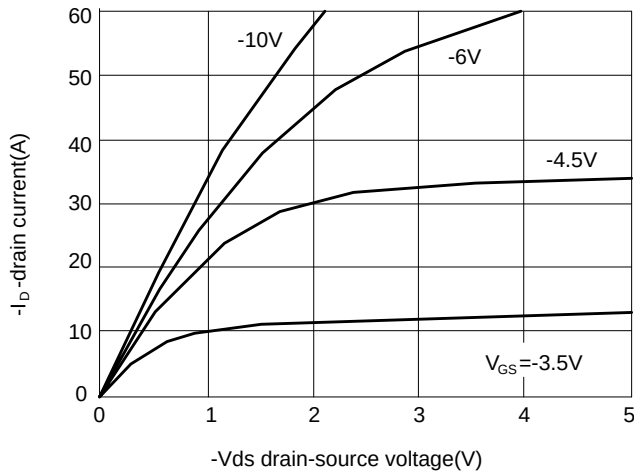


Figure 1: Output characteristics

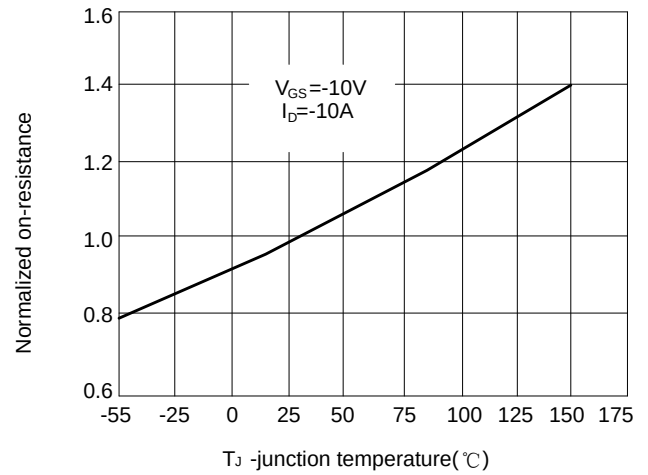


Figure 2: $R_{DS(on)}$ -junction temperature

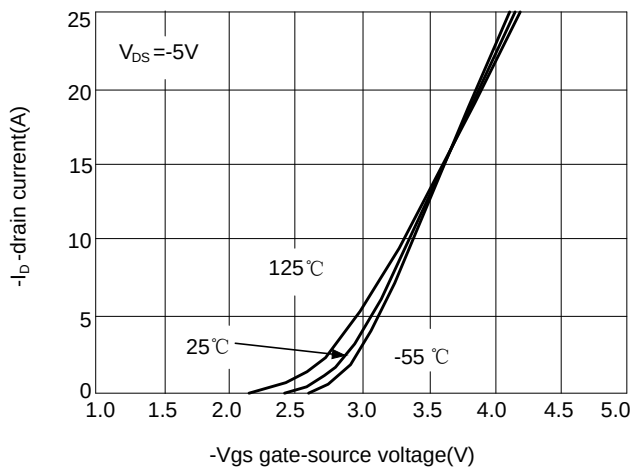


Figure 3: Transfer characteristics

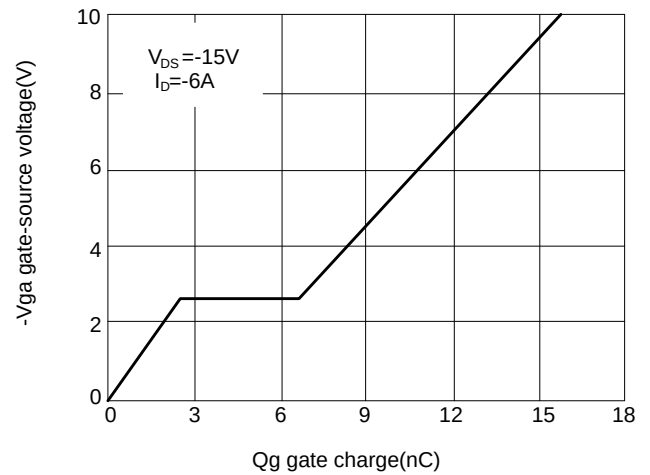


Figure 4: Gate charge

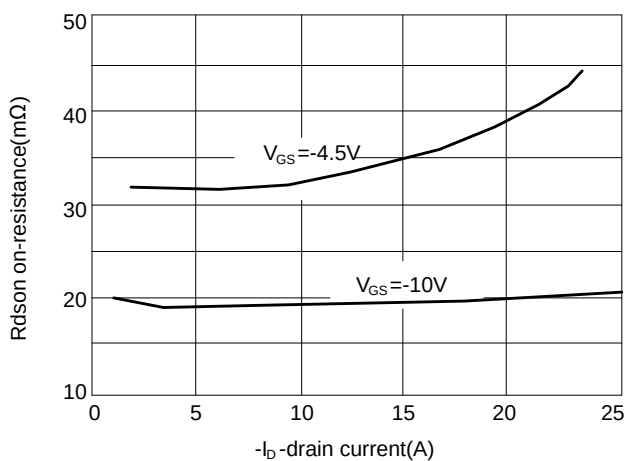


Figure 5: $R_{DS(on)}$ drain current

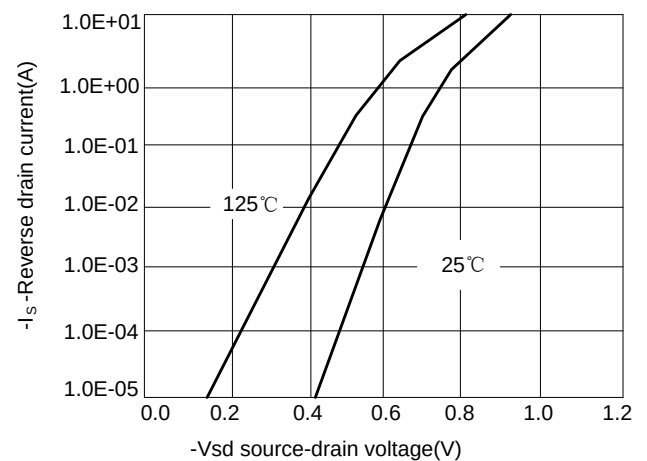


Figure 6: Source-drain diode forward

■ P-MOS TYPICAL CHARACTERISTICS(Cont.)

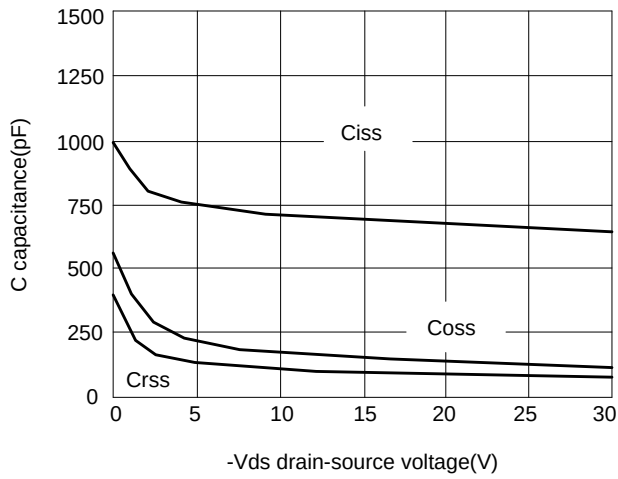


Figure 7: Capacitance vs. vds

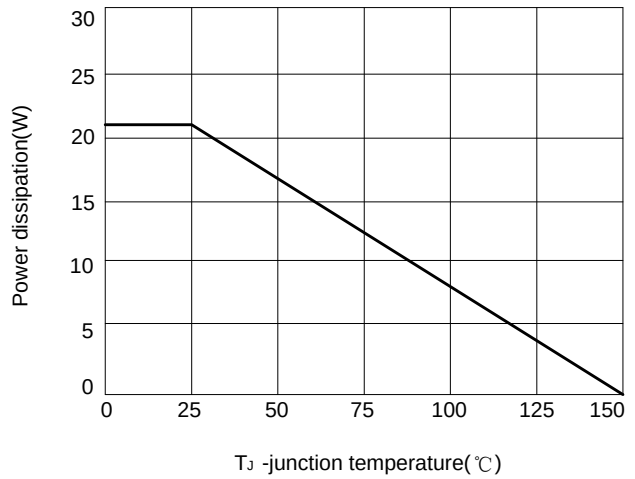


Figure 8: Power de-rating

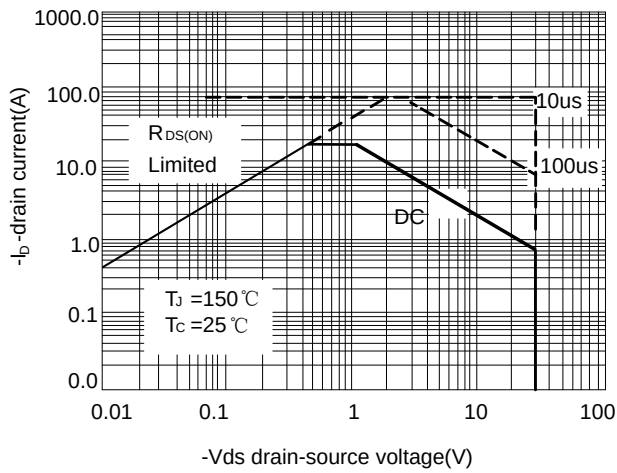


Figure 9: Safe Operating Area

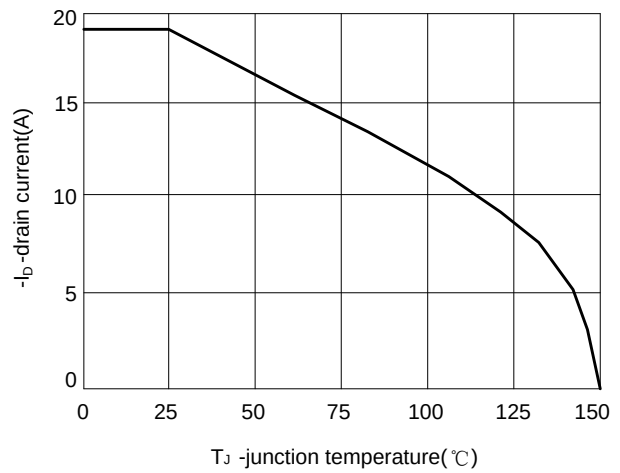
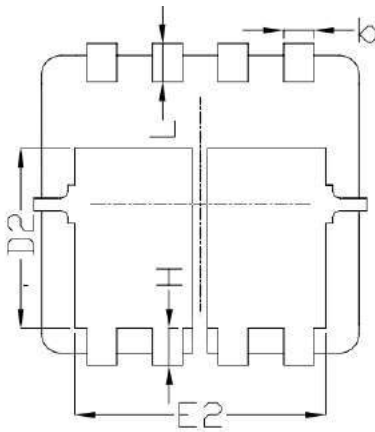
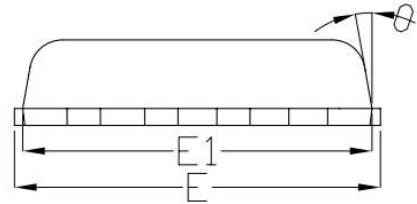
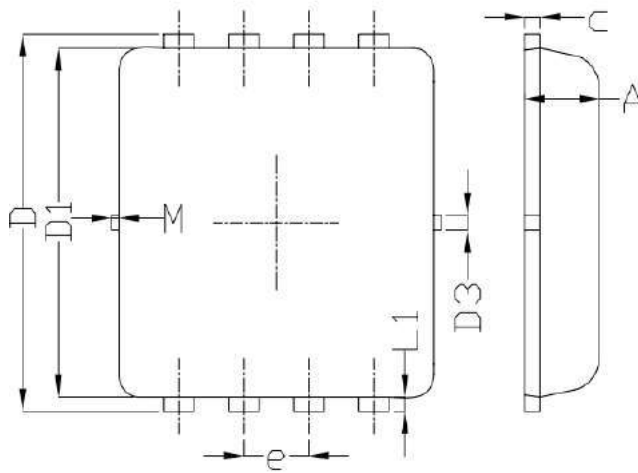


Figure 10: Current de-rating

■ PDFN3X3 Package Mechanical Data



SYMBOL	DIMENSIONAL REOMTS		
	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			