

PRODUCT CHARACTERISTICS

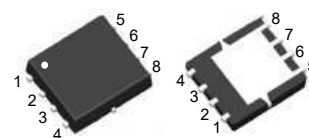
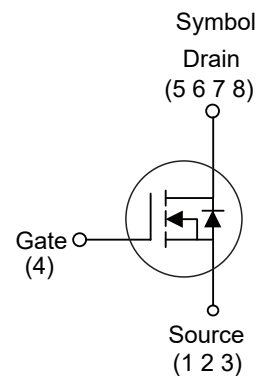
V_{DS}	30V
$R_{DS(ON)} Typ(@V_{GS}=10V)$	6.3m Ω
$R_{DS(ON)} Typ(@V_{GS}=4.5V)$	9.4m Ω
I_D	60A

APPLICATIONS

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

FEATURE

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



PDFN3X3

ORDER INFORMATION

Order Codes		Package	Packing
Halogen-Free	Halogen		
MOT3166J	N/A	PDFN3X3	5000 pieces/Reel

ABSOLUTE MAXIMUM RATINGS($T_c=25^{\circ}C$, unless otherwise specified)

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current Continuous($@V_{GS}=10V, T_c=25^{\circ}C$)	I_D	60	A
Drain Current Continuous($@V_{GS}=10V, T_c=100^{\circ}C$)	I_D	38	A
Drain Current Pulsed	I_{DM}	240	A
Avalanche Energy *	E_{AS}	64	mJ
Power Dissipation	P_D	45	W
Junction Temperature	T_J	+150	$^{\circ}C$
Storage Temperature	T_{STG}	-55~ +150	$^{\circ}C$

THERMAL CHARACTERISTICS

Parameter	Symbol	Typ	Unit
Junction to Case	R_{thJC}	2.8	$^{\circ}C/W$

Note: * EAS condition: $T_J=25^{\circ}C, V_{DD}=20V, V_G=10V, L=0.5mH, R_g=25\Omega$

■ 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 _{DS} =0V, V _{GS} =+20V	-	-	100	nA
Gate to Source Reverse Leakage	I _{GSS(R)}	V _{DS} =0V, V _{GS} =-20V	-	-	-100	nA
On characteristics						
Drain to Source On-Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =20 A	-	6.3	7.5	mΩ
		V _{GS} =4.5V, I _D =20 A	-	9.4	13	mΩ
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} =V _{GS} , I _D =250μA	1	1.5	2.0	V
Dynamic characteristics						
Gate Resistance	R _g	V _{GS} =0V, V _{DS} =0V ,f=1.0MHz	-	7	-	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	-	1100	-	pF
Output Capacitance	C _{oss}		-	136	-	pF
Reverse Transfer Capacitance	C _{rss}		-	94	-	pF
Resistive Switching Characteristics						
Turn-on Delay Time	t _{d(ON)}	V _{GS} =10V, V _{DS} =15V I _D =20 A ,R _G =6Ω	-	2.3	-	ns
Rise Time	t _r		-	2.4	-	ns
Turn-off Delay Time	t _{d(OFF)}		-	12.5	-	ns
Fall Time	t _f		-	6.8	-	ns
Total Gate Charge	Q _g	I _D =20 A, V _{DS} =15V V _{GS} =10V	-	13.4	-	nC
Gate to Source Charge	Q _{gs}		-	2.1	-	nC
Gate to Drain("Miller") Charge	Q _{gd}		-	2	-	nC
Source-Drain Diode Characteristics						
Continuous Source Current(Body Diode)	I _s		-	-	60	A
Maximum Pulsed Current(Body Diode)	I _{SM}		-	-	240	A
Diode Forward Voltage	V _{SD}	I _{SD} =1 A, V _{GS} =0V	-	0.72	1.2	V
Reverse Recovery Time	t _{rr}	I _{SD} =20 A, T _J =25 °C	-	26	-	ns
Reverse Recovery Charge	Q _{rr}		dI/dt=100A/μs	-	10.5	-

■ TYPICAL CHARACTERISTICS

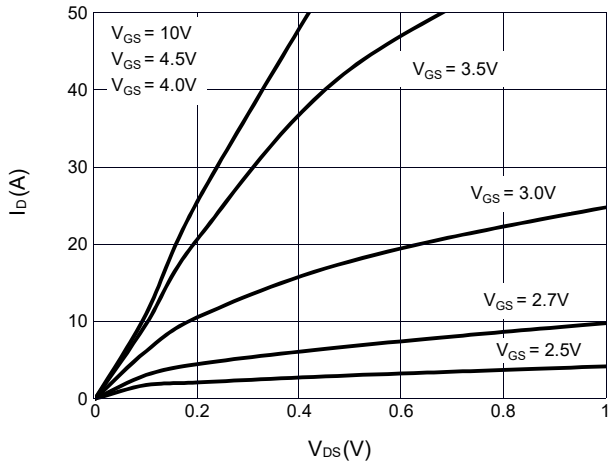


Figure 1: Saturation Characteristics

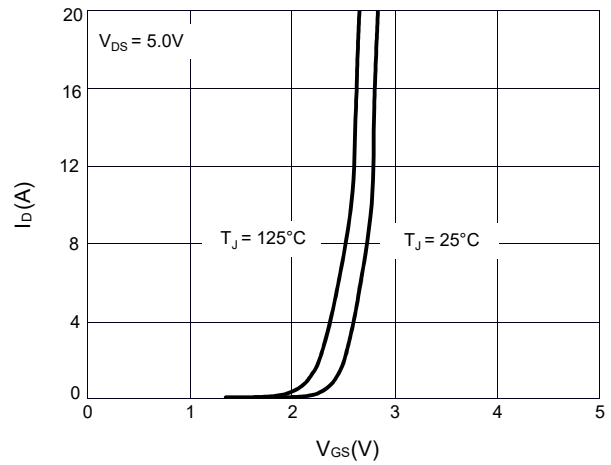


Figure 2: Transfer Characteristics

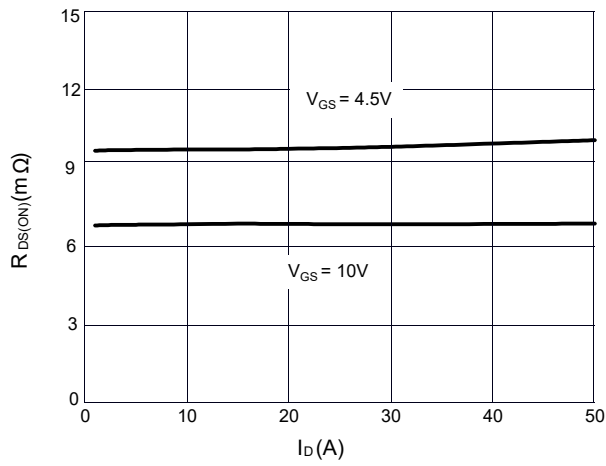


Figure 3: $R_{DS(ON)}$ vs. Drain Current

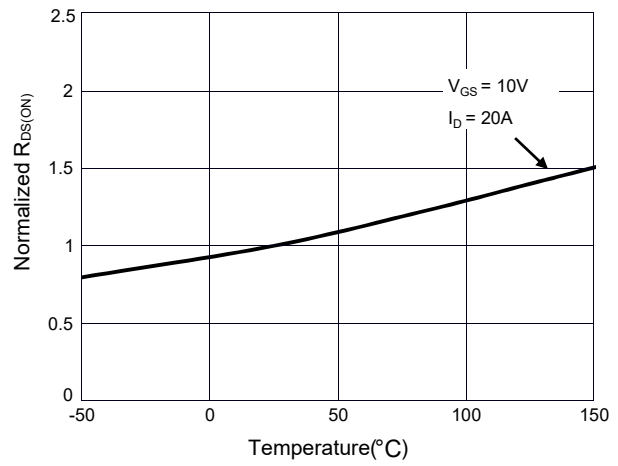


Figure 4: $R_{DS(ON)}$ vs. Junction Temperature

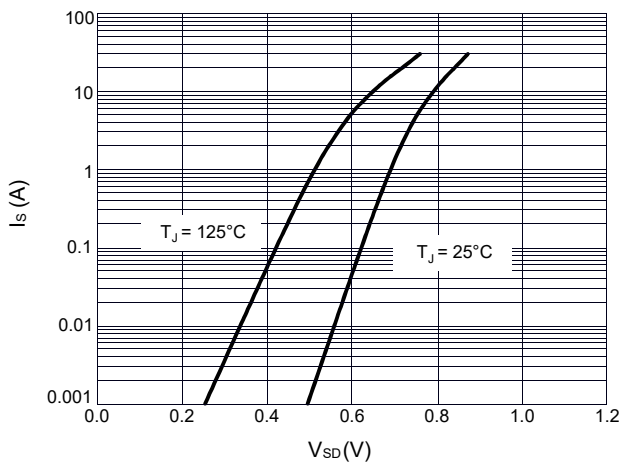


Figure 5: Body diode Characteristics

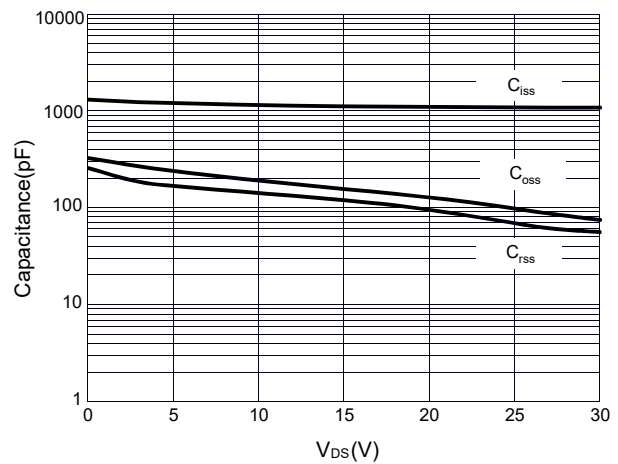


Figure 6: Capacitance Characteristics

■ TYPICAL CHARACTERISTICS(Cont.)

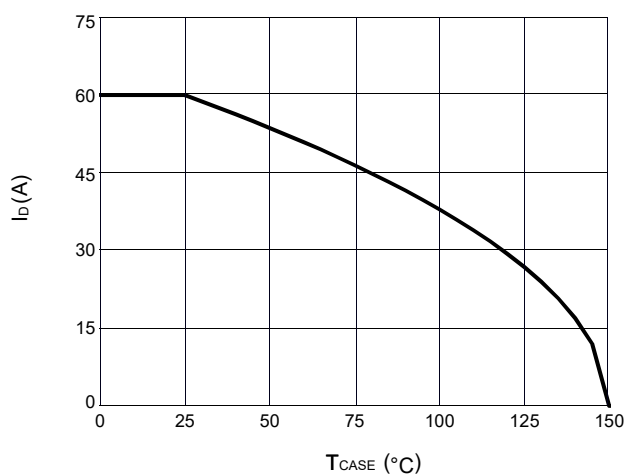


Figure 7: Current De-rating

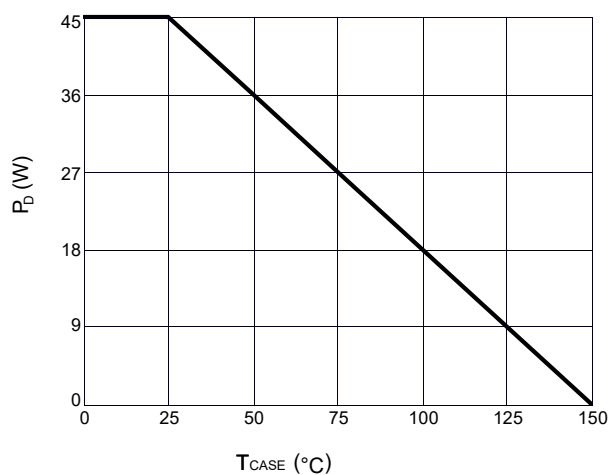


Figure 8: Power De-rating

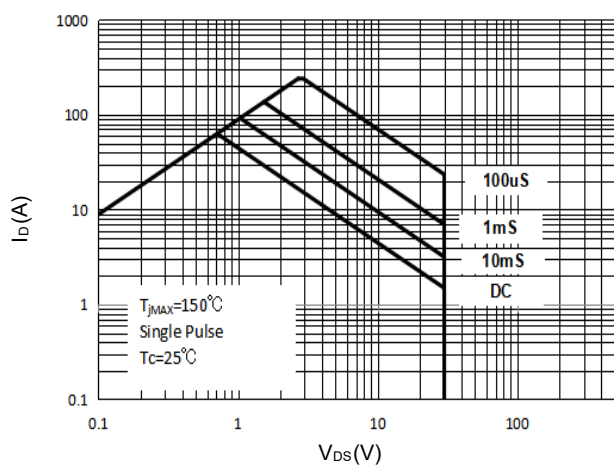
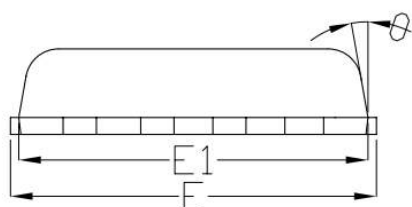
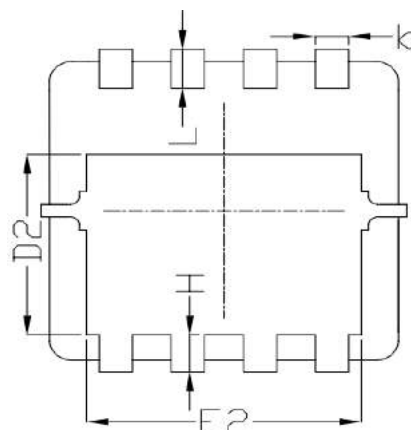
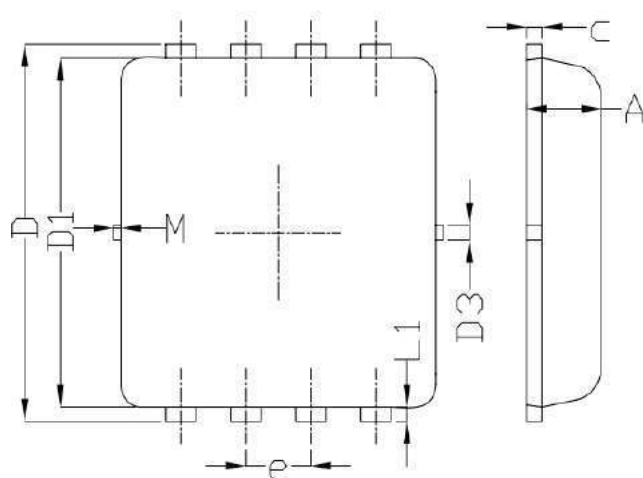
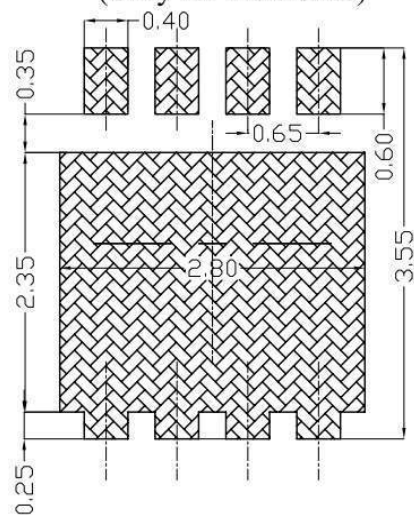


Figure 9: Maximum Safe Operating Area

■ PDFN3X3 PACKAGE OUTLINE DIMENSIONS



Land Pattern
(Only for Reference)



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			

NOTICE:

- 1、 The information in this document is believed to be accurate and reliable at the time of publication, but is subject to change without notice. Guangdong Renmao Electronics Co., Ltd. ("The Company") reserves the right to modify its products and specifications at any time, and assumes no responsibility for any errors or omissions herein.
- 2、 The Company makes no warranty, express or implied, regarding the fitness of its products for any particular purpose. Customers are responsible for verifying the suitability of the products for their applications and for the design and testing of their end products.
- 3、 The values listed under "Absolute Maximum Ratings" are stress ratings only. Stresses beyond these limits may cause permanent damage to the device.
- 4、 The Company's products are not designed or authorized for use in life support, medical, military, aerospace, or other critical applications where the failure of the product could result in personal injury or death. Any such use is at the customer's own risk.
- 5、 These devices are sensitive to electrostatic discharge (ESD). Proper handling and protection procedures must be observed.
- 6、 No license to any intellectual property right is granted by this document. All products are sold subject to the Company's terms and conditions of sale.