

■ PRODUCT CHARACTERISTICS

VDSS	30V
$R_{DS(on)Typ}(V_{GS}=10V)$	2.4mΩ
$R_{DS(on)Typ}(V_{GS}=4.5V)$	3.8mΩ
ID	120A

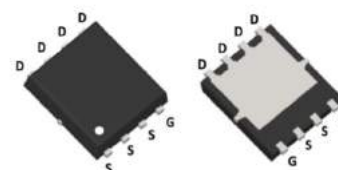
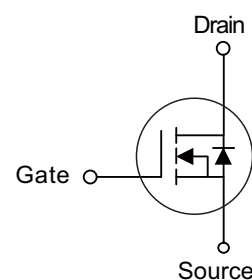
■ APPLICATIONS

- * Power switching application
- * Hard switched and high frequency circuits
- * Uninterruptible power supply

■ FEATURES

- * High density cell design for ultra low $R_{DS(on)}$
- * Excellent package for good heat DISSIPATION

Symbol



■ ORDER INFORMATION

Order codes		Package	Packing
Halogen-Free	Halogen		
N/A	MOT3136G	PDFN5X6-8L	5000 pieces /Reel

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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current-Continuous	I_D	120	A
Drain Current-Continuous($T_C=100^{\circ}\text{C}$)	$I_D(100^{\circ}\text{C})$	84	A
Pulsed Drain Current	I_{DM}	420	A
Maximum Power Dissipation	P_D	120	W
Single pulse avalanche energy	E_{AS}	350	mJ
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	1.25	$^{\circ}\text{C/W}$
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 To 175	$^{\circ}\text{C}$

■ ELECTRICAL CHARACTERISTICS ($T_C=25^{\circ}\text{C}$, unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250μA	30	-	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =30V, 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	1.6	3	V
Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =20A	-	2.4	3.6	mΩ
		V _{GS} =4.5V, I _D =20A	-	3.8	4.5	mΩ
Gate resistance	R _G	F=1.0MHz	-	1.5	-	Ω
Forward Transconductance	g _{FS}	V _{DS} =5V, I _D =5A	10	-	-	S
Dynamic characteristics						
Input Capacitance	C _{ISS}	V _{DS} =25V, V _{GS} =0V, F=1.0MHz	-	2800	-	PF
Output Capacitance	C _{OSS}		-	260	-	PF
Reverse Transfer Capacitance	C _{RSS}		-	240	-	PF
Switching characteristics						
Turn-on Delay Time	t _{d(on)}	V _{GS} =10V, V _{DS} =20V R _L =0.75Ω, R _{GEN} =3Ω	-	11	-	nS
Turn-on Rise Time	t _r		-	10	-	nS
Turn-Off Delay Time	t _{d(off)}		-	38	-	nS
Turn-Off Fall Time	t _f		-	11	-	nS
Total Gate Charge	Q _g	V _{GS} =10V, V _{DS} =15V, I _D =20A	-	79	-	nC
Gate-Source Charge	Q _{gs}		-	9	-	nC
Gate-Drain Charge	Q _{gd}		-	18	-	nC
Drain-source diode characteristics						
Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S =20A	-	-	1.2	V
Diode Forward Current	I _S		-	-	120	A
Reverse Recovery Time	t _{rr}	T _J = 25°C, I _F =20A di/dt = 100A/μs	-	58	-	nS
Reverse Recovery Charge	Q _{rr}		-	115	-	nC

■ TYPICAL CHARACTERISTICS

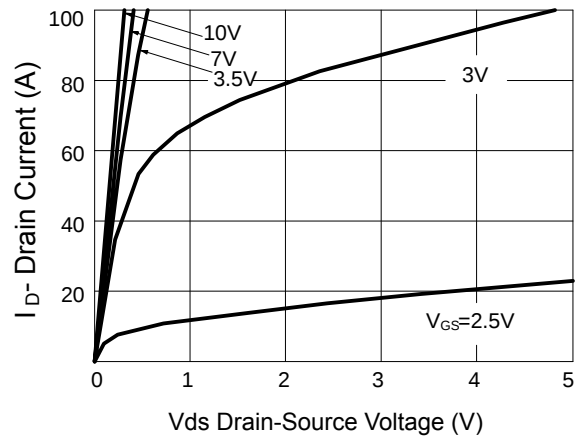


Figure 1: Output characteristics

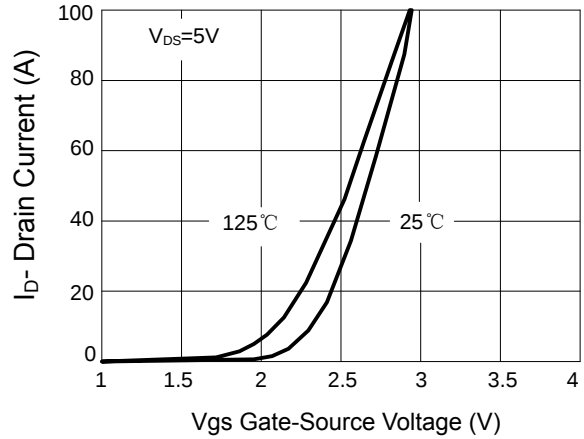


Figure 2: Transfer characteristics

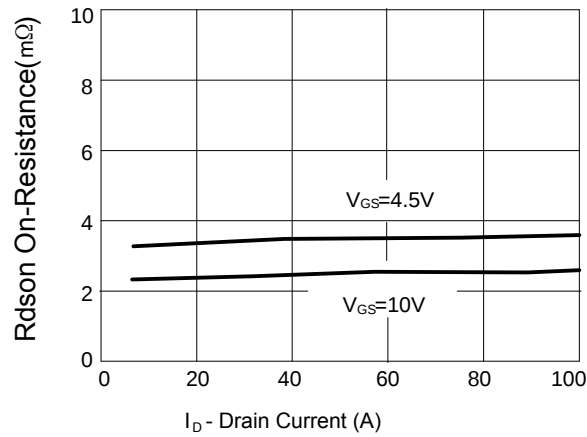


Figure 3: $R_{DS(on)}$ -drain-current

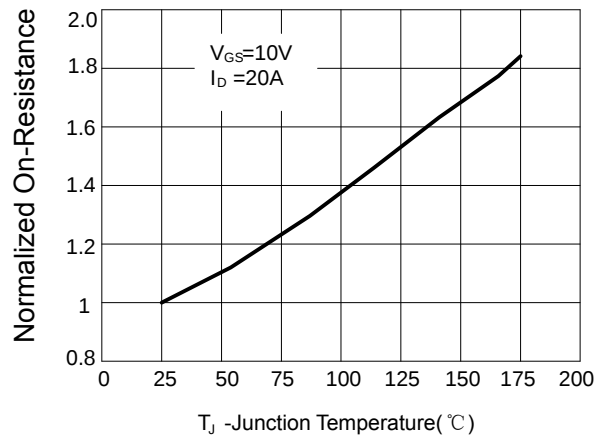


Figure 4: $R_{DS(on)}$ -junction temperature

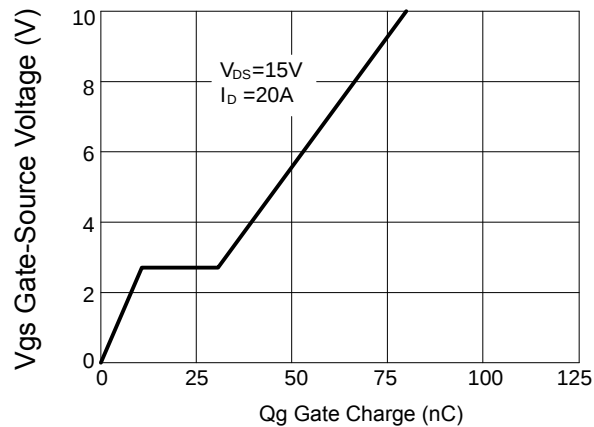


Figure 5: Gate charge

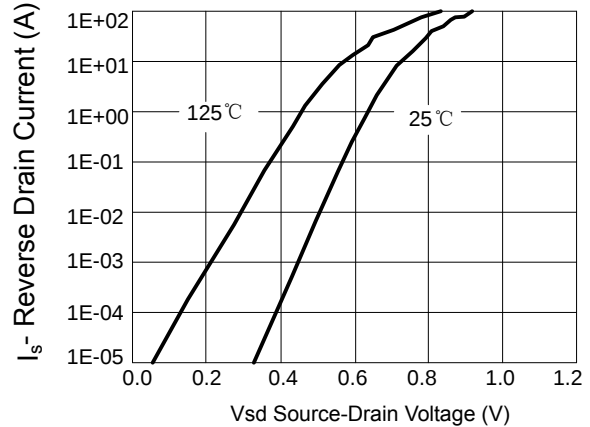


Figure 6: Source-drain diode forward

■ TYPICAL CHARACTERISTICS(Cont.)

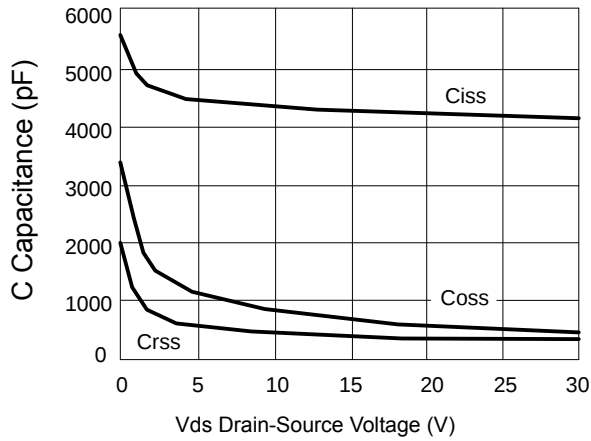


Figure 7: Capacitance vs vds

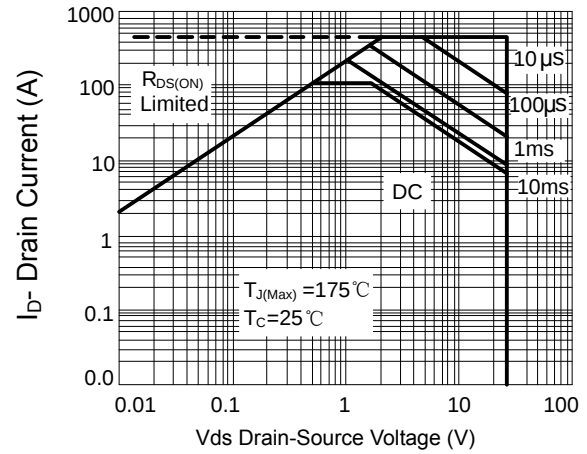


Figure 8: Safe operating area

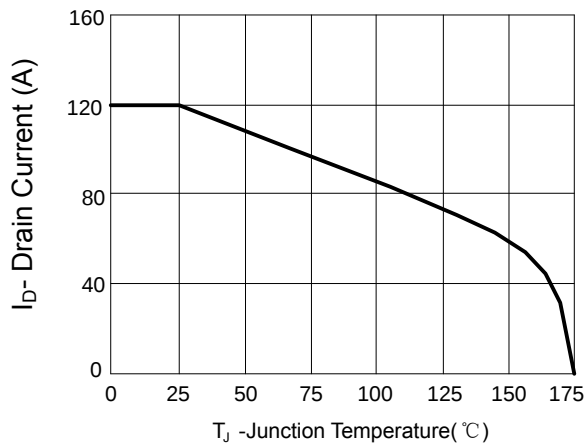


Figure 9: Current de-rating

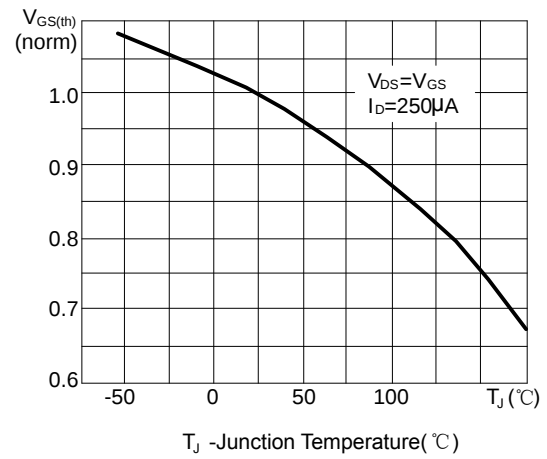
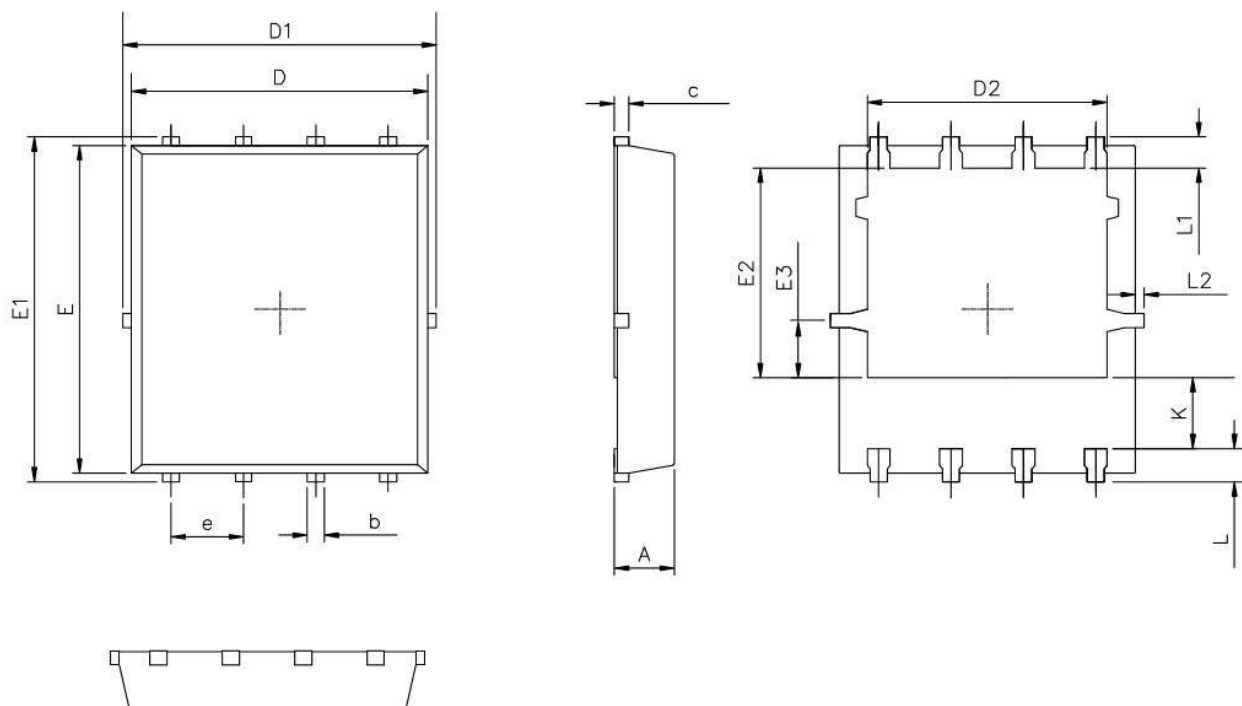
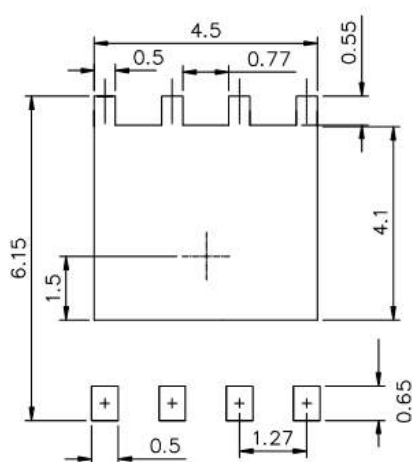


Figure 10: Vgs vs junction temperature

■ PDFN5X6-8L Package Mechanical Data



RECOMMENDED LAND PATTERN



UNIT:mm

	MIN	NOM	MAX
A	0.90	1.00	1.10
b	0.25	0.35	0.50
c	0.10	0.20	0.30
D	4.80	5.00	5.30
D1	4.90	5.10	5.50
D2	3.92	4.02	4.20
E	5.65	5.75	5.85
E1	5.90	6.05	6.20
E2	3.325	3.525	3.775
E3	0.80	0.90	1.00
e		1.27	
L	0.40	0.55	0.70
L1		0.65	
L2	0.00		0.15
K	1.00	1.30	1.50