

■ 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

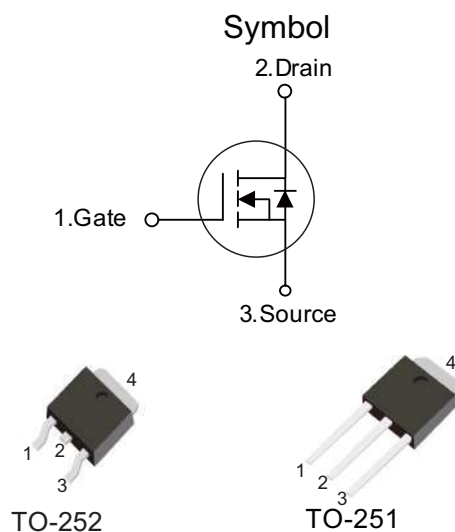
- * High density cell design gor ultra low Rdson
- * Excellent package for good heat DISSIPATION

■ ORDER INFORMATION

Order codes		Package	Packing
Halogen-Free	Halogen		
N/A	MOT3136D	TO-252	2500 pieces /Reel
N/A	MOT3136C	TO-251	70 pieces/Tube

■ ABSOLUTE MAXIMUM RATINGS (T_C = 25°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°C)	I _D (100°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 _{θJC}	1.25	°C/W
Operating Junction and Storage Temperature Range	T _J ,T _{STG}	-55 To 175	°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}	$V_{GS}=0V, I_D=250\mu A$	30	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=30V, V_{GS}=0V$	-	-	1	μA
Gate-Body Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 100	nA
On characteristics						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1	1.5	3	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=20A$	-	2.4	3.6	m Ω
		$V_{GS}=4.5V, I_D=20A$	-	3.8	4.5	m Ω
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	$t_{d(on)}$	$V_{GS}=10V, V_{DS}=20V$ $R_L=0.75\Omega, R_{GEN}=3\Omega$	-	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	$V_{GS}=10V, V_{DS}=15V, I_D=20A$	-	11	-	nS
Total Gate Charge	Q_g		-	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}	$T_J = 25^{\circ}C, I_F = 20A$ $di/dt = 100A/\mu s$	-	58	-	nS
Reverse Recovery Charge	Q_{rr}		-	115	-	nC

■ TYPICAL CHARACTERISTICS

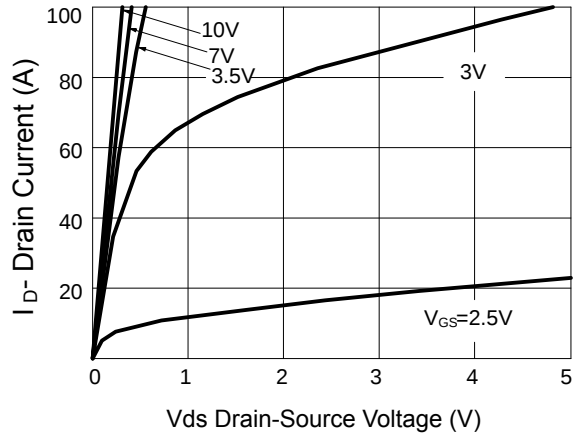


Figure 1: Output characteristics

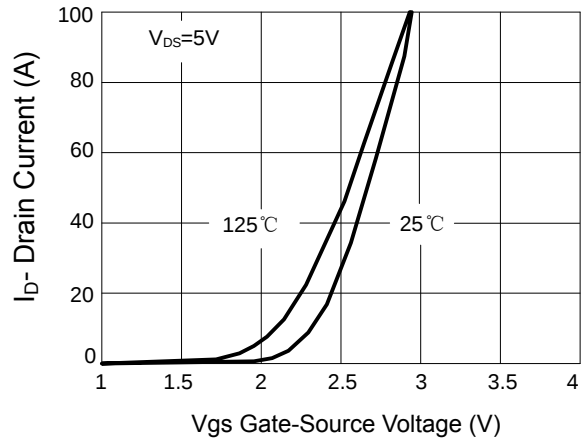


Figure 2: Transfer characteristics

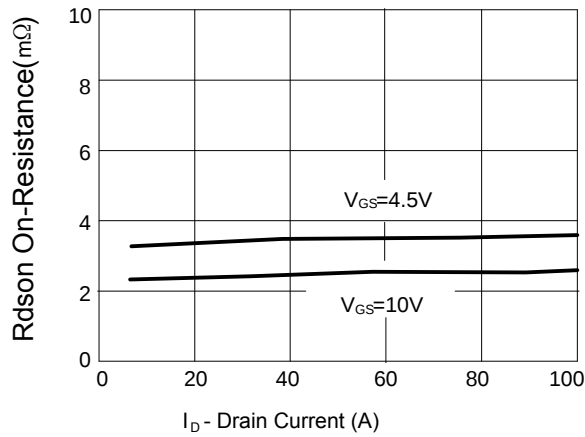


Figure 3: $R_{DS(on)}$ -drain-current

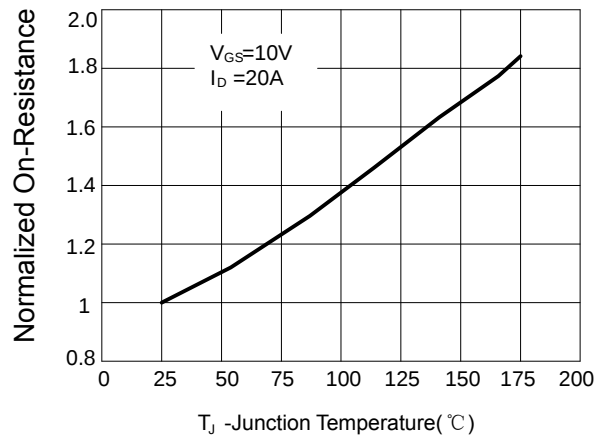


Figure 4: $R_{DS(on)}$ -junction temperature

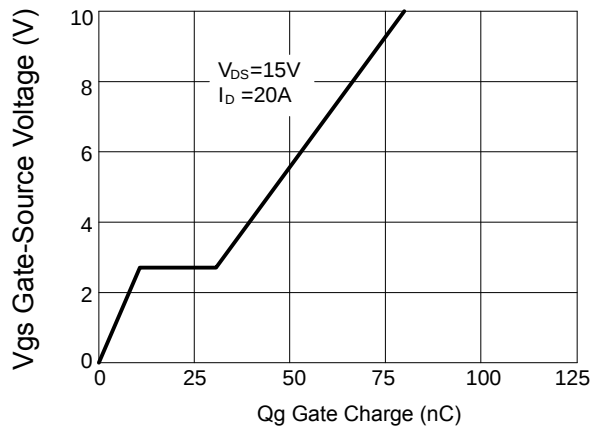


Figure 5: Gate charge

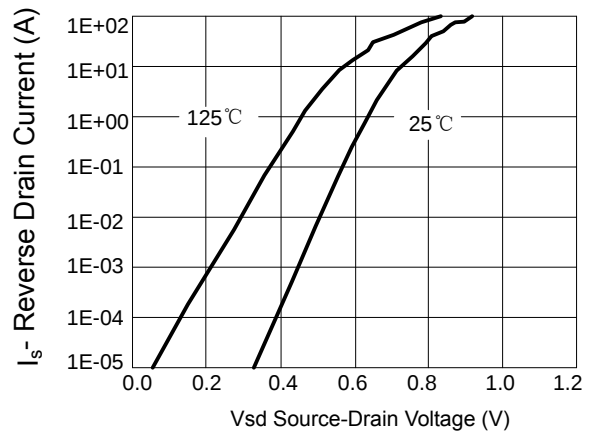


Figure 6: Source-drain diode forward

■ TYPICAL CHARACTERISTICS(Cont.)

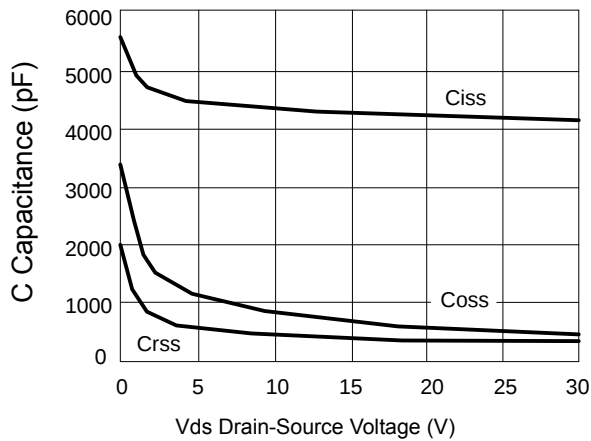


Figure 7: Capacitance vs vds

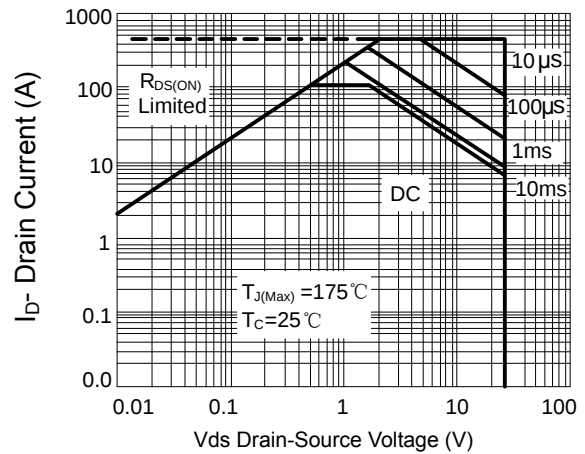


Figure 8: Safe operating area

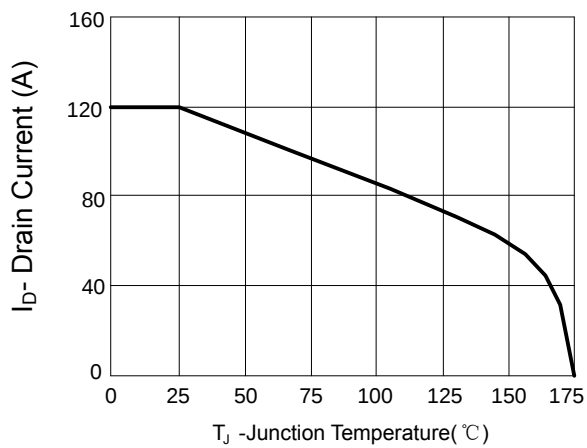


Figure 9: Current de-rating

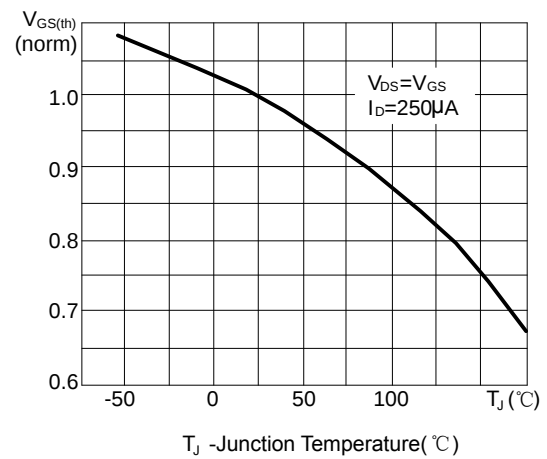
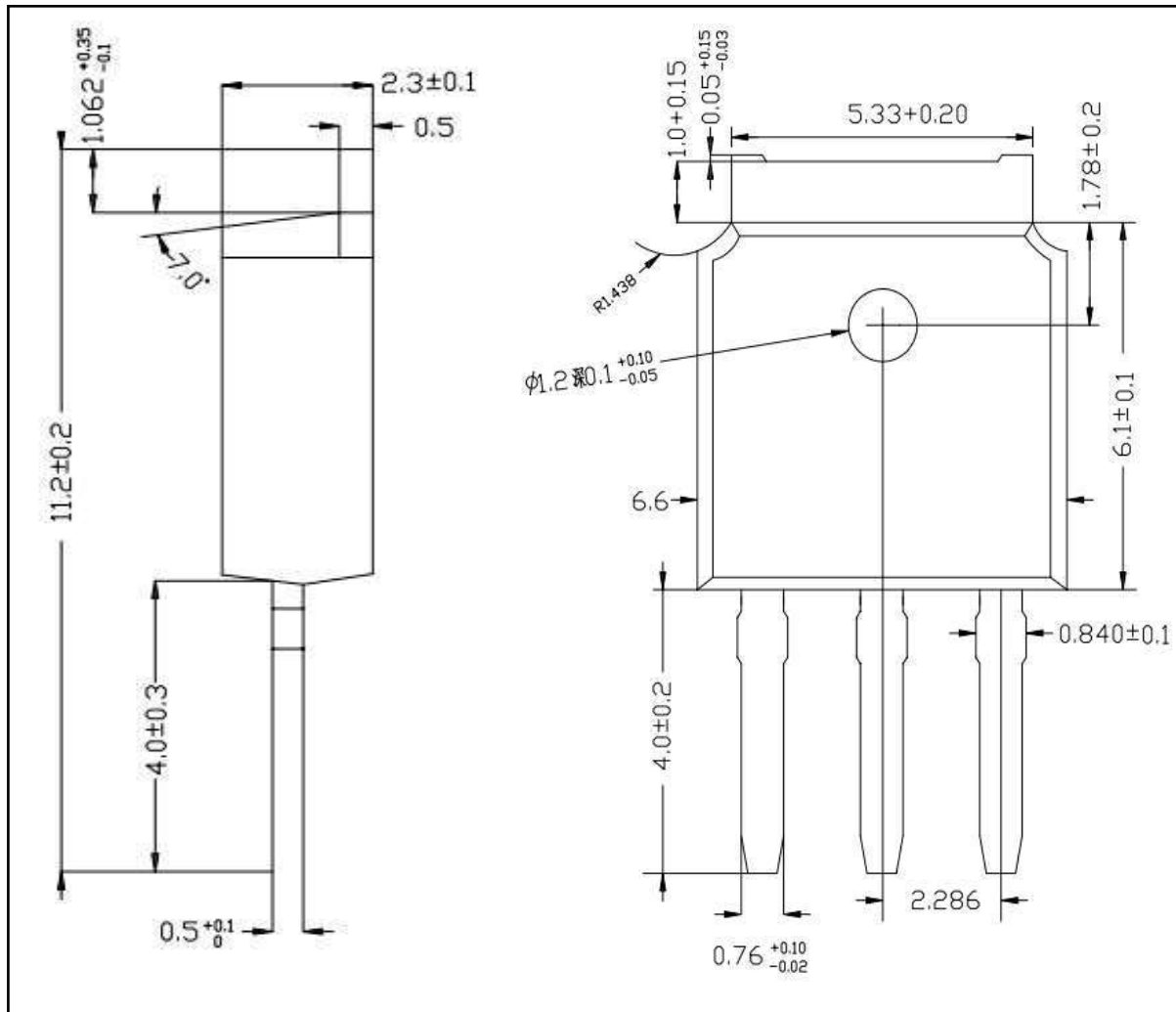


Figure 10: Vgs vs junction temperature

■ TO-251 PACKAGE OUTLINE DIMENSIONS



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