

PRODUCT CHARACTERISTICS

VDSS	30V
$R_{DS(on)Typ}(V_{GS}=10V)$	2.6m Ω
$R_{DS(on)Typ}(V_{GS}=4.5V)$	4.2m Ω
ID	100A

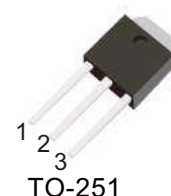
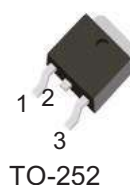
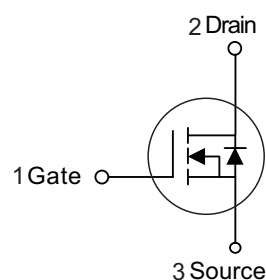
APPLICATIONS

- Power Management in Telecom., Industrial Automation
- Current Switching in DC/DC & AC/DC (SR) Sub-systems
- Motor Driving In Power Tool, E-vehicle, Robotics

FEATURES

- Low Gate Charge
- High Current Capability
- 100% UIS Tested, 100% R_g Tested

Symbol



ORDER INFORMATION

Order codes		Package	Packing
Halogen-Free	Halogen		
N/A	MOT3133D	TO-252	2500 pieces /Reel
N/A	MOT3133C	TO-251	70 pieces/Tube

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	100	A
Drain Current-Continuous($T_C=100^\circ\text{C}$)	$I_D(100^\circ\text{C})$	63	A
Pulsed Drain Current	I_{DM}	400	A
Single Pulsed Avalanche Energy	E_{AS}	306	mJ
Maximum Power Dissipation	P_D	78	W
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	1.6	$^\circ\text{C/W}$
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 To 150	$^\circ\text{C}$

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

Parameter	Symbol	Test 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	-	2.5	V
Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =20A	-	2.6	3.3	mΩ
		V _{GS} =4.5V, I _D =10A	-	4.2	5.2	mΩ
Forward Transconductance	g _{FS}	V _{DS} =10V, I _D =3A	10	-	-	S
Dynamic characteristics						
Input Capacitance	C _{iss}	V _{DS} =20V, V _{GS} =0V, F=1.0MHz	-	3200	-	PF
Output Capacitance	C _{oss}		-	286	-	PF
Reverse Transfer Capacitance	C _{rss}		-	251	-	PF
Switching characteristics						
Turn-on Delay Time	t _{d(on)}	V _{DD} =15V, I _D =30A V _{GS} =10V, R _G =3Ω	-	11	-	nS
Turn-on Rise Time	t _r		-	29	-	nS
Turn-Off Delay Time	t _{d(off)}		-	47	-	nS
Turn-Off Fall Time	t _f		-	18	-	nS
Total Gate Charge	Q _g	V _{DS} =15V, I _D =30A, V _{GS} =10V	-	58	-	nC
Gate-Source Charge	Q _{gs}		-	12	-	nC
Gate-Drain Charge	Q _{gd}		-	13	-	nC
Drain-source diode characteristics						
Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S =30A	-	-	1.2	V
Diode Forward Current	I _S		-	-	100	A
Reverse Recovery Time	t _{rr}	T _J = 25°C, I _F =30A di/dt = 100A/μs	-	16	-	nS
Reverse Recovery Charge	Q _{rr}		-	7	-	nS

■ TYPICAL CHARACTERISTICS

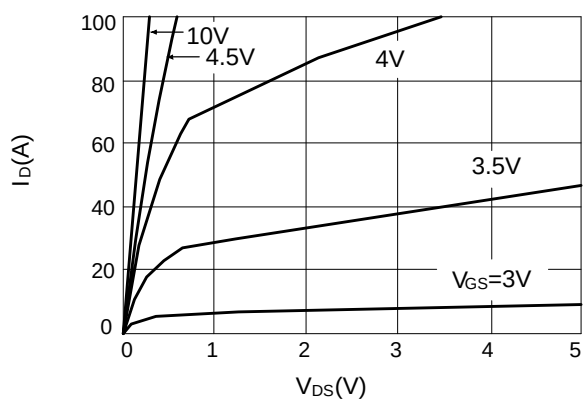


Figure 1: Output characteristics

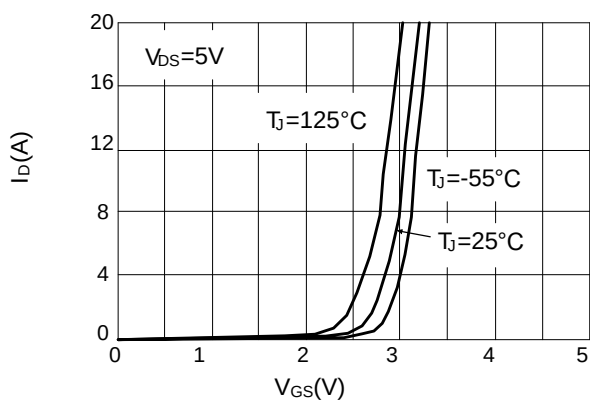


Figure 2: Transfer characteristics

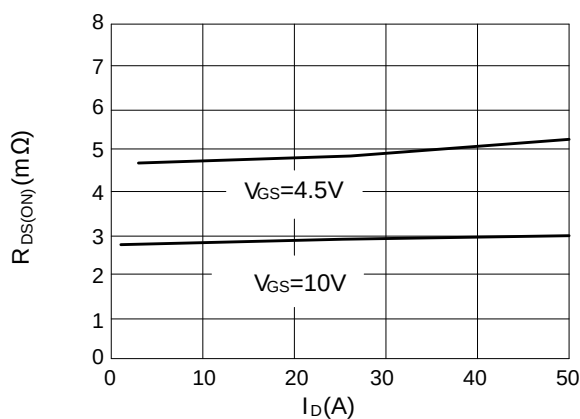


Figure 3: On-resistance vs. drain current

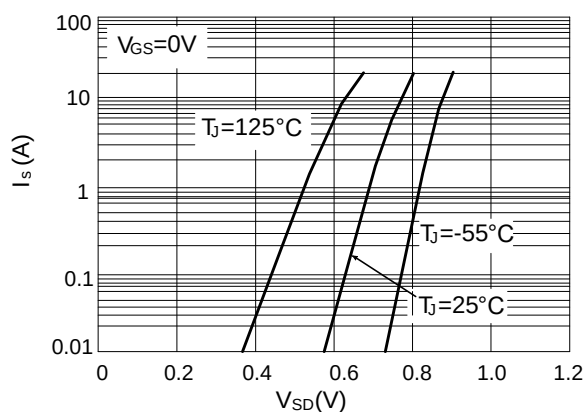


Figure 4: Body diode characteristics

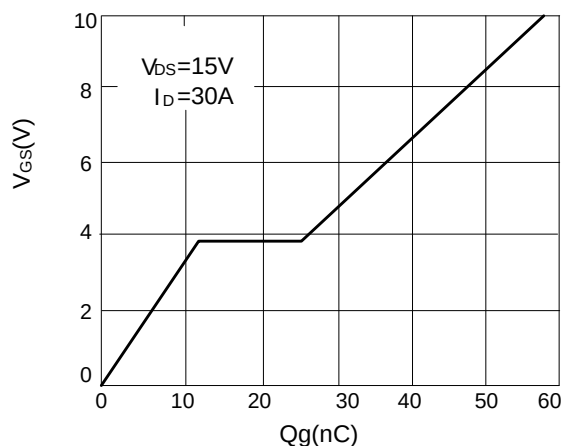


Figure 5: Gate charge characteristics

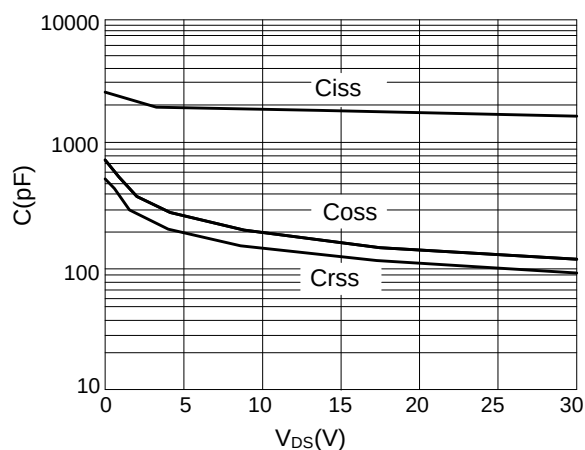


Figure 6: Capacitance characteristics

■ TYPICAL CHARACTERISTICS(Cont.)

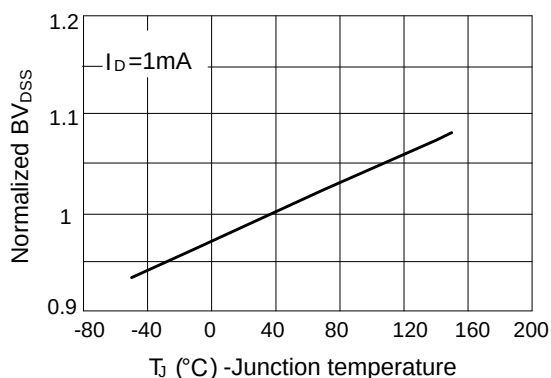


Figure 7: Normalized breakdown voltage vs. junction temperature

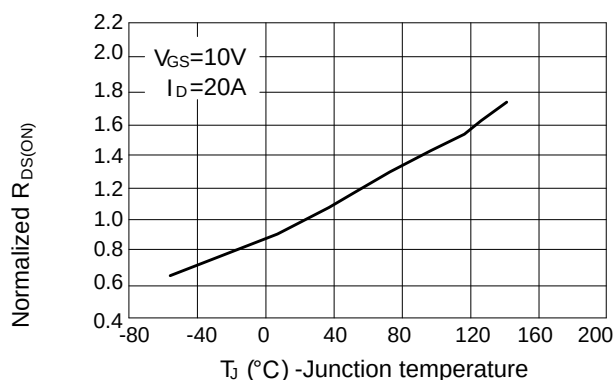


Figure 8: Normalized on-resistance vs. junction temperature

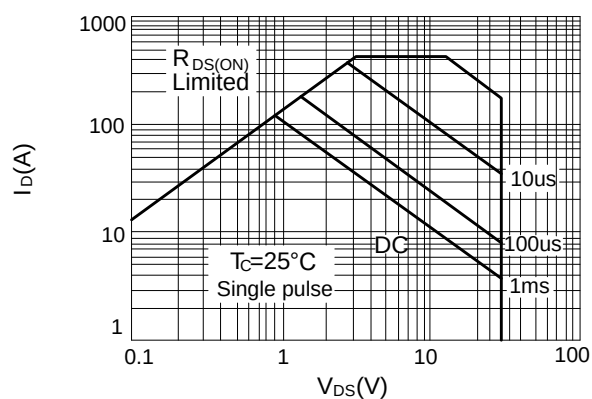


Figure 9: Maximum safe operating area

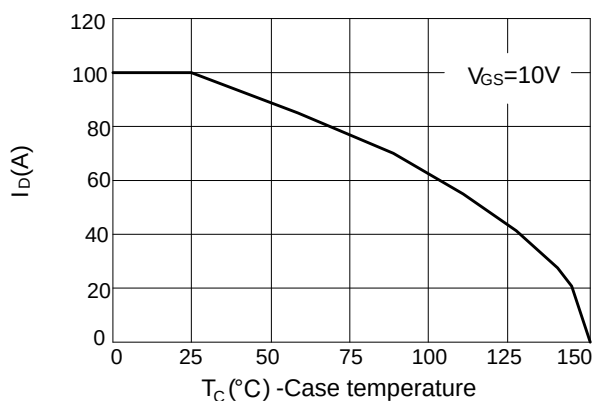
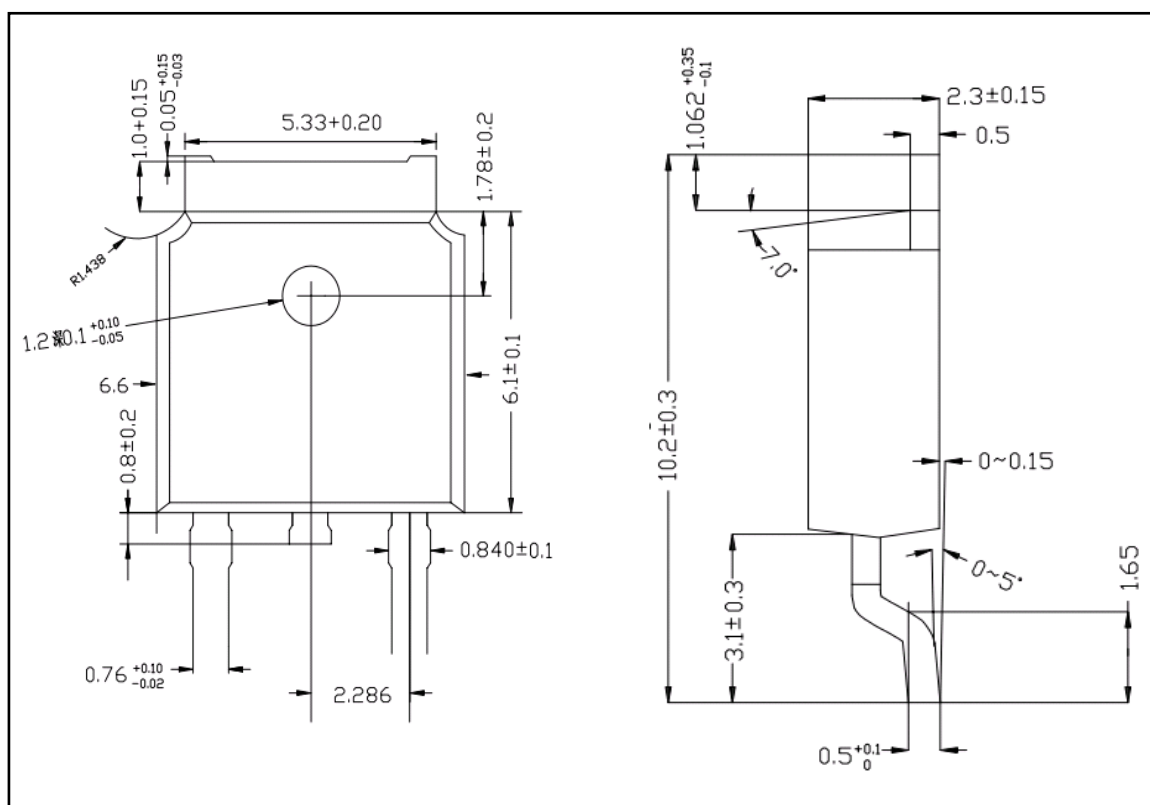


Figure 10: Maximum continuous drain vs case temperature

■ TO-252 PACKAGE OUTLINE DIMENSIONS



Technical drawing of a mechanical part, showing two views: a side view (left) and a front view (right).

Side View Dimensions:

- Total height: 11.2 ± 0.2
- Top flange width: 2.3 ± 0.1
- Top flange thickness: $1.062^{+0.25}_{-0.1}$
- Top flange offset: 0.5
- Base width: $0.5^{+0.1}_0$
- Base height: 4.0 ± 0.3
- Top flange chamfer: 1.0

Front View Dimensions:

- Top flange width: 5.33 ± 0.20
- Top flange thickness: 1.0 ± 0.15
- Top flange offset: $0.05^{+0.15}_{-0.03}$
- Top flange chamfer: $R1.438$
- Central hole diameter: $\phi 1.2 \pm 0.1^{+0.10}_{-0.05}$
- Body height: 6.6
- Base width: 0.840 ± 0.1
- Base height: 4.0 ± 0.2
- Base offset: $0.76^{+0.10}_{-0.02}$
- Base chamfer: 2.286
- Overall height: 6.1 ± 0.1
- Top flange chamfer: 1.78 ± 0.2