

■ PRODUCT CHARACTERISTICS

V_{DS}	-30 V
$R_{DS(ON)-Typ}$ (at $V_{GS}=-10V$)	23 m Ω
$R_{DS(ON)-Typ}$ (at $V_{GS}=-4.5V$)	33 m Ω
I_D	-10A

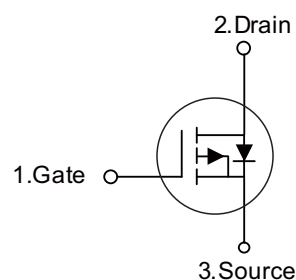
■ APPLICATIONS

LCD TV Appliances
LCDM Appliances
High power inerrter system

■ FEATURES

Surface-mounted package
Advanced trench cell design

Symbol



TO-252



TO-251

■ ORDER INFORMATION

Order codes		Package	Packing
Halogen-Free	Halogen		
N/A	MOT10P03D	TO-252	2500 pieces /Reel
N/A	MOT10P03C	TO-251	70 pieces/Tube

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

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V _{DSS}	-30	V
Gate -Source Voltage		V _{GSS}	±20	V
Continuous Drain Current	T _C =25℃	I _D	-10	A
	T _C =100℃	I _D	-6.5	A
Pulsed Drain Current		I _{DM}	-40	A
Single Pulsed Avalanche Energy		E _{AS}	72	mJ
Power Dissipation		P _D	30	W
Thermal Resistance, Junction to Case		R _{θJC}	4.1	℃ /W
Operating and Storage Temperature Range		T _J , T _{STG}	-55 to + 150	℃

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

Parameter	Symbol	Test condition	Min	Typ	Max	Unit
Off characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=-250\mu A$	-30	-	-	V
Zero Gate Voltage Drain Voltage	I_{DSS}	$V_{DS}=-30V, V_{GS}=0V,$	-	-	-1	μA
Gate to Body Leakage Current	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 20V$	-	-	± 100	nA
On characteristics						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1.0	-1.5	-2.5	V
Static Drain-Source on-Resistance	$R_{DS(on)}$	$V_{GS}=-10V, I_D=-5A$	-	23	30	m Ω
		$V_{GS}=-4.5V, I_D=-5A$	-	33	45	m Ω
Dynamic characteristics						
Input Capacitance	C_{iss}	$V_{DS}=-00V, V_{GS}=0V,$ $f=1.0MHz$	-	830	-	pF
Output Capacitance	C_{oss}		-	99	-	pF
Reverse Transfer Capacitance	C_{rss}		-	86	-	pF
Total Gate Charge	Q_g		$V_{DD}=-15V, I_D=-5A,$ $V_{GS}=-10V$	-	23	-
Gate-Source Charge	Q_{gs}	-		4	-	nC
Gate-Drain(“Miller”) Charge	Q_{gd}	-		5	-	nC
Switching characteristics						
Turn-on Delay Time	$t_{d(on)}$	$V_{DD}=-15V, I_D=-5A,$ $V_{GS}=-10V, R_{GEN}=3\Omega$	-	4	-	ns
Turn-on Riss Time	t_r		-	3	-	ns
Turn-off Delay Time	$t_{d(off)}$		-	60	-	ns
Turn-off Fall Time	t_f		-	50	-	ns
Drain-source diode characteristics						
Continuous Drain to Source	I_S		-	-	-10	A
Pulsed Drain to Source	I_{SM}		-	-	-40	A
Drain to Source Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=-10A$	-	-	-1.2	V

Dynamic Characteristics

C_{iss}	Input Capacitance	$V_{GS} = 0V, V_{DS} = -15V,$ $f = 1MHz$	-	1267	-	pF
C_{oss}	Output Capacitance		-	166	-	pF
C_{rss}	Reverse Transfer Capacitance		-	126	-	pF
Q_g	Total Gate Charge	$V_{GS} = 0 \text{ to } -10V$ $V_{DS} = -15V, I_D = -5A$	-	23	-	nC
Q_{gs}	Gate Source Charge		-	4	-	nC
Q_{gd}	Gate Drain ("Miller") Charge		-	5	-	nC

Switching Characteristics

$t_{d(on)}$	Turn-On DelayTime	$V_{GS} = -10V, V_{DD} = -15V$ $I_D = -5A, R_{GEN} = 3\Omega$	-	4	-	ns
t_r	Turn-On Rise Time		-	3	-	ns
$t_{d(off)}$	Turn-Off DelayTime		-	60	-	ns
t_f	Turn-Off Fall Time		-	50	-	ns

Drain-Source Diode Characteristics and Max Ratings

I _S	Maximum Continuous Drain to Source Diode Forward Current	-	-	-12	A	
I _{SM}	Maximum Pulsed Drain to Source Diode Forward Current	-	-	-48	A	
V _{SD}	Drain to Source Diode Forward Voltage	V _{GS} = 0V, I _S = -12A	-	-	-1.2	V
trr	Body Diode Reverse Recovery Time	I _F = -5A, di/dt = 100A/us	-	12	-	ns
Qrr	Body Diode Reverse Recovery Charge		-	4	-	nC

Notes: 1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.

■ TYPICAL CHARACTERISTICS

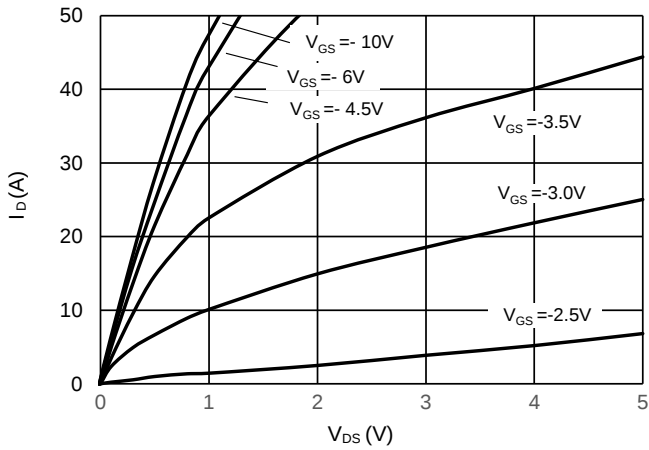


Figure 1: Output characteristics

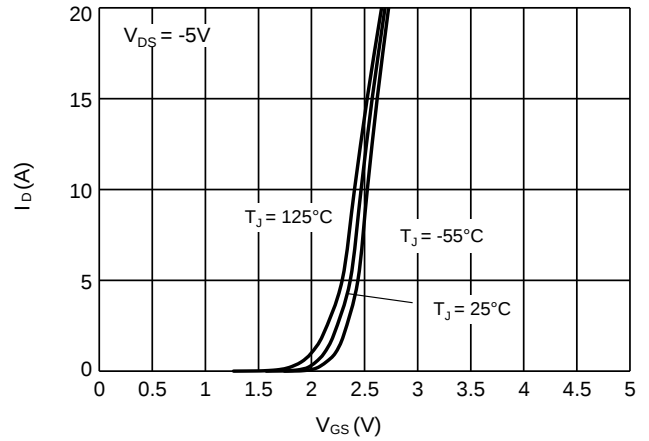


Figure 2: Typical transfer characteristics

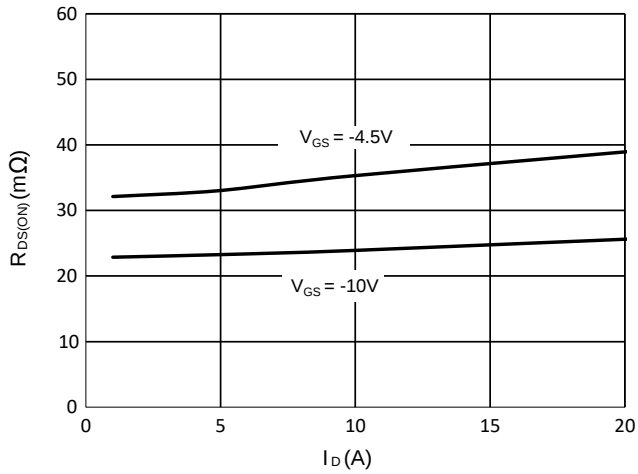


Figure 3: On-resistance vs. drain current

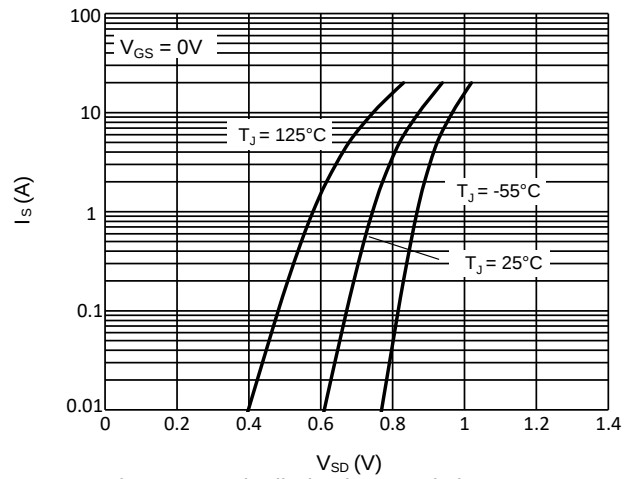


Figure 4: Body diode characteristics

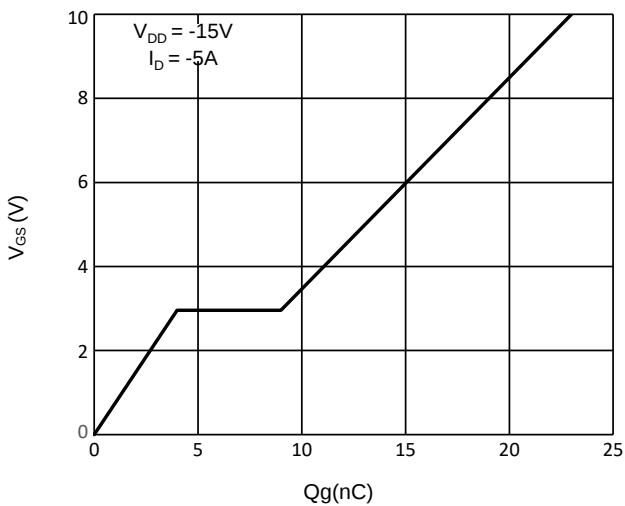


Figure 5: Gate charge characteristics

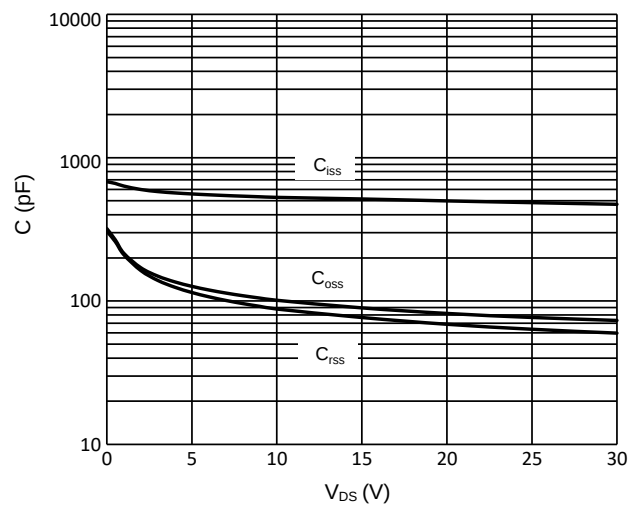


Figure 6: Capacitance characteristics

■ TYPICAL CHARACTERISTICS(Cont.)

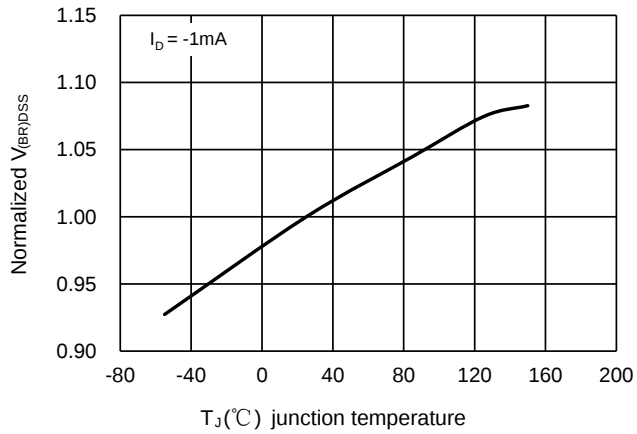


Figure 7: Normalized breakdown voltage vs junction temperature

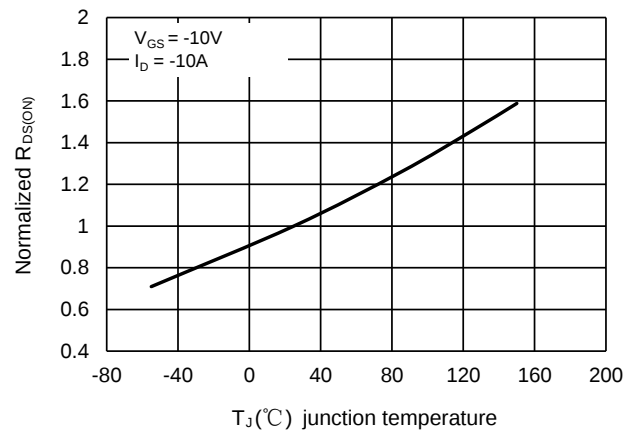


Figure 8: Normalized on-resistance vs junction temperature

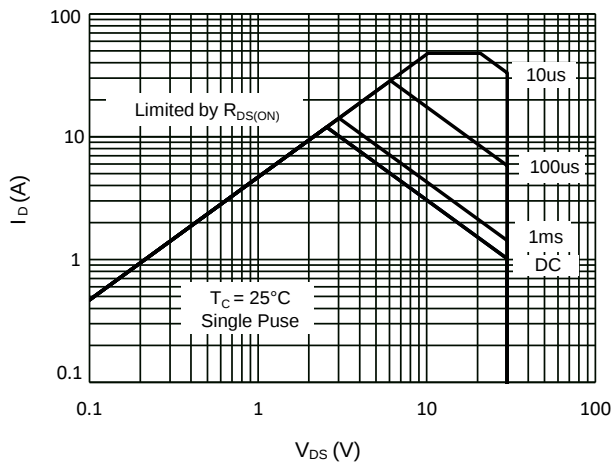


Figure 9: Maximum safe operating area junction temperature

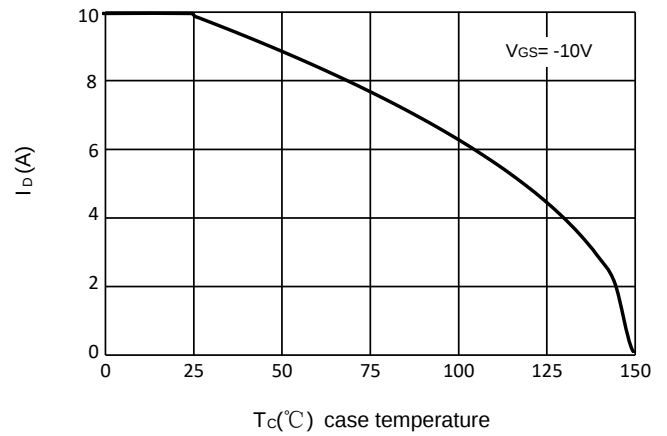
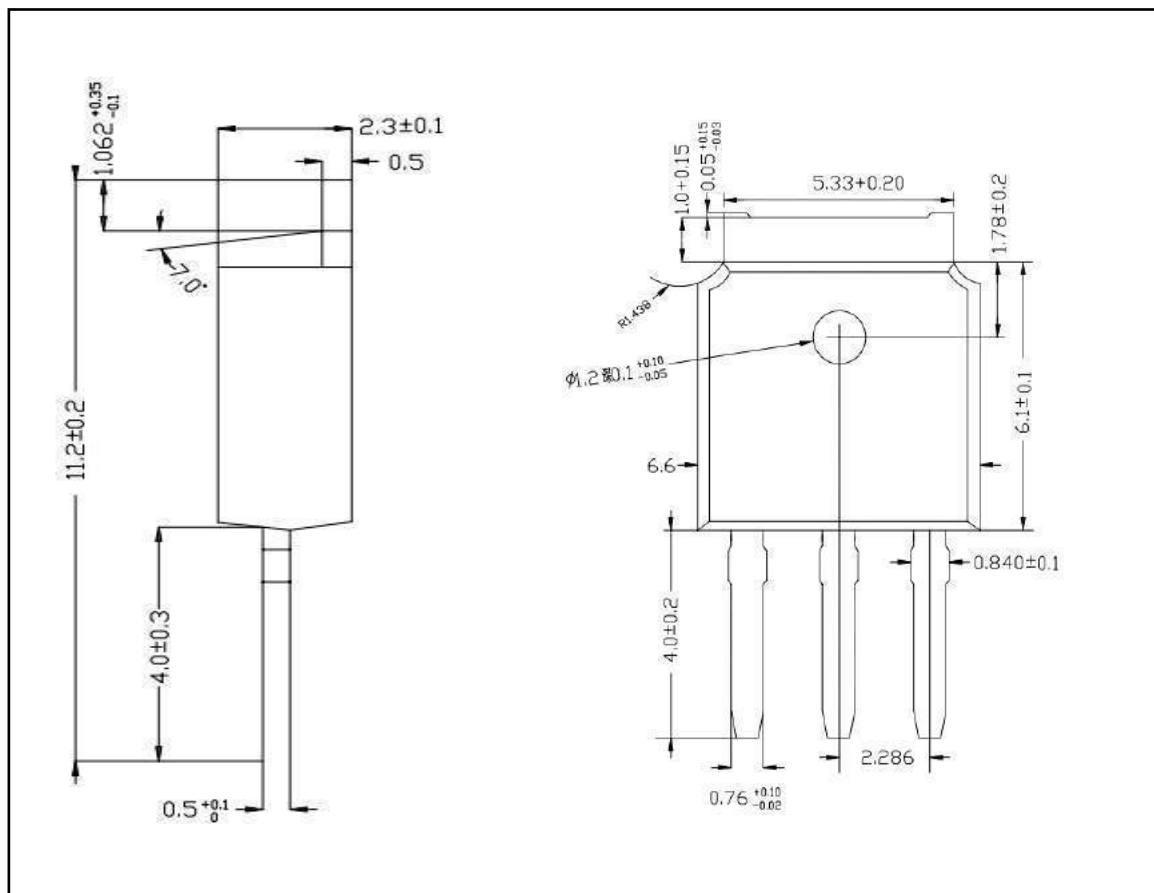


Figure 10: Maximum continuous drain current vs. case temperature

■ TO-252 PACKAGE OUTLINE DIMENSIONS



■ TO-252 PACKAGE OUTLINE DIMENSIONS

