

PRODUCT CHARACTERISTICS

V_{DSS}	30	V
$R_{DS(ON)-Max}$	4.5 at $V_{GS}=10V$	m Ω
$R_{DS(ON)-Max}$	7.2 at $V_{GS}=4.5 V$	m Ω
I_D	100	A

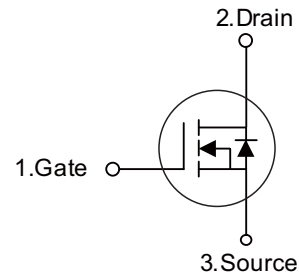
APPLICATIONS

- Switching applications

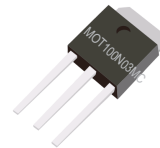
FEATURES

- $R_{DS(on)} \cdot Q_g$ industry's benchmark
- Conduction losses reduced
- Switching losses reduced
- Low threshold device

Symbol



TO-252



TO-251

ORDER INFORMATION

Order codes		Package	Packing
Halogen-Free	Halogen		
N/A	MOT100N03MD	TO-252	2500 pieces /Reel
N/A	MOT100N03MC	TO-251	70 pieces/Tube

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

PARAMETER	SYMBOL	RATINGS	UNIT
Drain-Source Voltage	V_{DSS}	30	V
Gate-Source Voltage	V_{GSS}	± 20	V
Continuous Drain Current	I_D	100	A
Pulsed Drain Current (Note 2)	I_{DM}	400	A
Single Pulsed Avalanche Current (Note 3)	I_{AS}	35	A
Single Pulsed Avalanche Energy (Note 3)	E_{AS}	875	mJ
Power Dissipation	P_D	50	W
Derate above 25°C		0.4	W/ $^\circ\text{C}$
Junction Temperature	T_J	+175	$^\circ\text{C}$
Storage Temperature	T_{STG}	-55 ~ +175	$^\circ\text{C}$

Note: 1. Absolute maximum ratings are those values beyond which the device could be permanently damaged.

Absolute maximum ratings are stress ratings only and functional device operation is not implied.

2. Pulse width limited by maximum junction temperature

3. $L = 0.5\text{mH}$, $I_{AS} = 35\text{A}$, $V_{DD} = 25\text{V}$, $R_G = 25\Omega$, Starting $T_J = 25^\circ\text{C}$.

THERMAL DATA

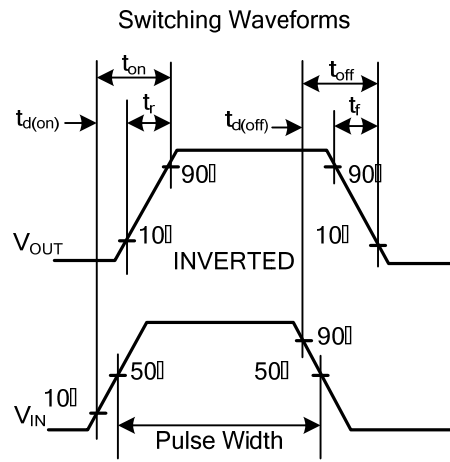
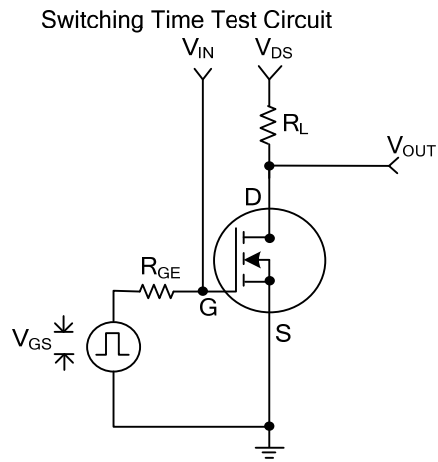
PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	110	$^\circ\text{C}/\text{W}$
Junction to Case	θ_{JC}	2.5	$^\circ\text{C}/\text{W}$

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

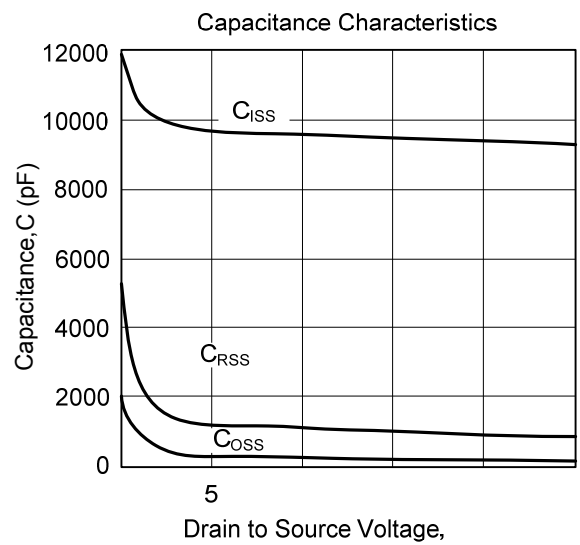
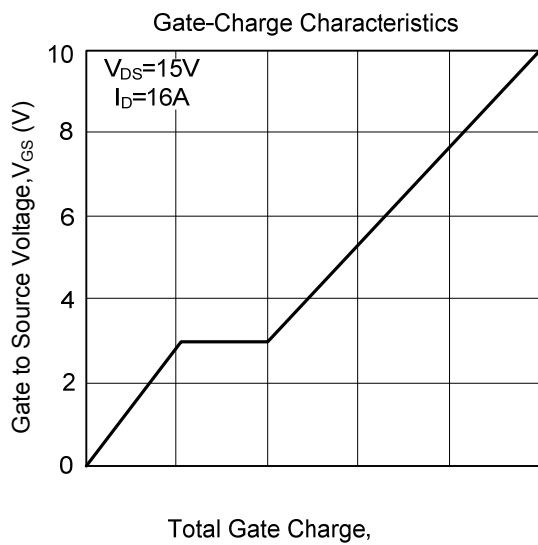
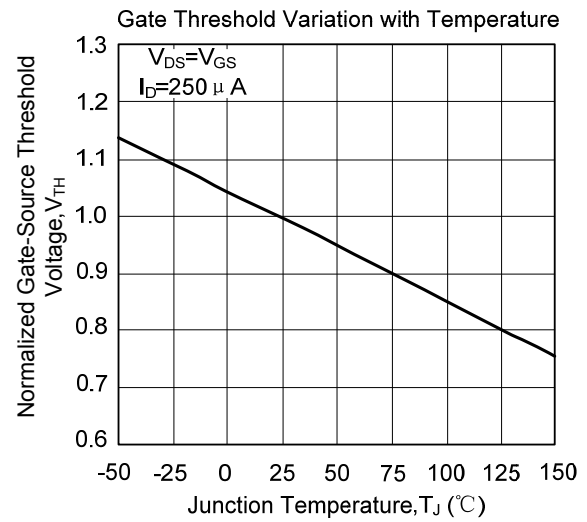
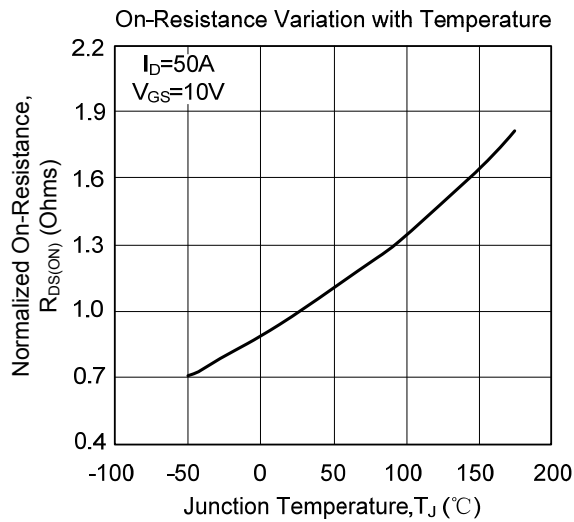
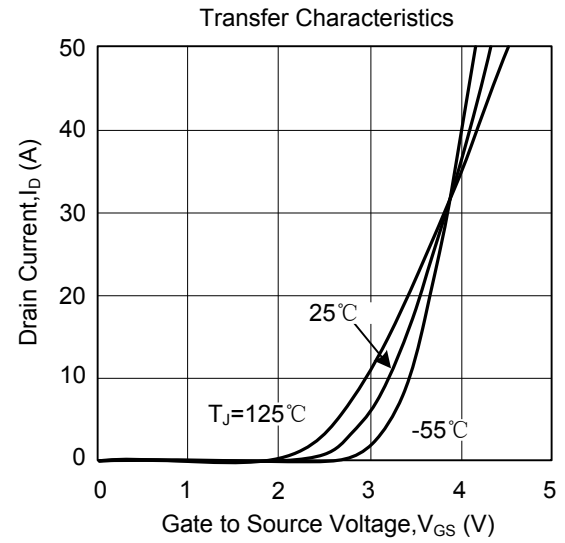
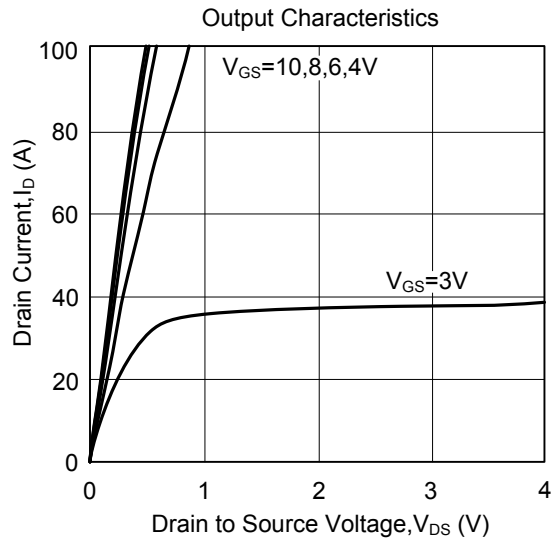
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0 V, I _D =250 μA	30			V
Drain-Source Leakage Current	I _{DSS}	V _{DS} =30 V, V _{GS} =0 V			1	μA
Gate-Source Leakage Current	I _{GSS}	V _{DS} =0 V, V _{GS} = ±20 V			±100	nA
ON CHARACTERISTICS(Note2)						
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} =V _{GS} , I _D =250 μA	1		3	V
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} =10 V, I _D =50 A		3.8	4.5	mΩ
		V _{GS} =4.5 V, I _D =40 A		5.3	7.2	
DYNAMIC PARAMETERS(Note3)						
Input Capacitance	C _{ISS}	V _{DS} =15V, V _{GS} =0V, f=1.0MHz		9500		pF
Output Capacitance	C _{OSS}			800		
Reverse Transfer Capacitance	C _{RSS}			300		
SWITCHING PARAMETERS(Note3)						
Total Gate Charge	Q _G	V _{DS} =15V, V _{GS} =5V, I _D =16A		50	65	nC
Gate Source Charge	Q _{GS}			20.8		
Gate Drain Charge	Q _{GD}			19		
Turn-ON Delay Time	t _{D(ON)}	V _{DD} =15V, I _D =1A, R _{GEN} =6Ω V _{GS} =10 V		25.7	50	ns
Turn-ON Rise Time	t _R			10	20	
Turn-OFF Delay Time	t _{D(OFF)}			128	200	
Turn-OFF Fall-Time	t _F			34	70	
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Drain-Source Diode Forward Voltage	V _{SD}	I _S =20 A, V _{GS} =0 V			1.5	V
Drain-Source Diode Forward Current	I _S				90	A

Note: 1. Pulse Test : Pulse Width < 300 μs , Duty Cycle < 2%.
2. Guaranteed by design, not subject to production testing.

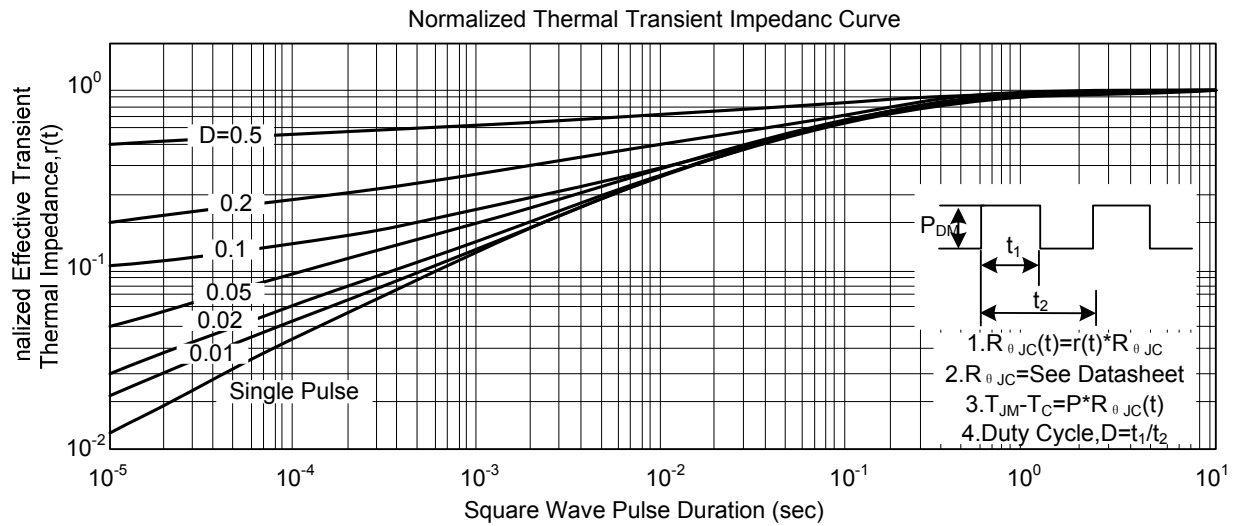
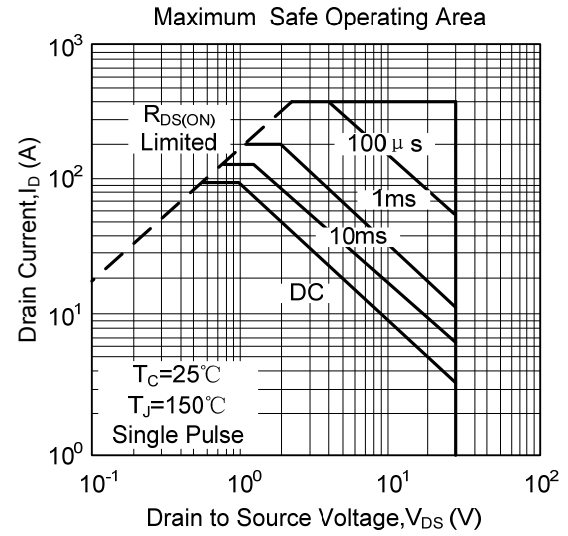
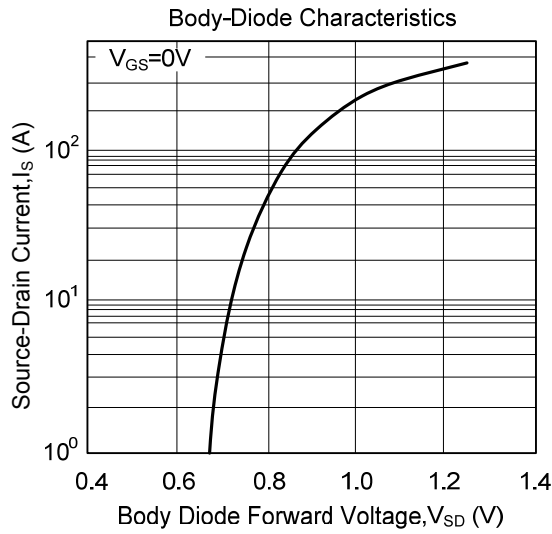
TEST CIRCUIT AND WAVEFORM



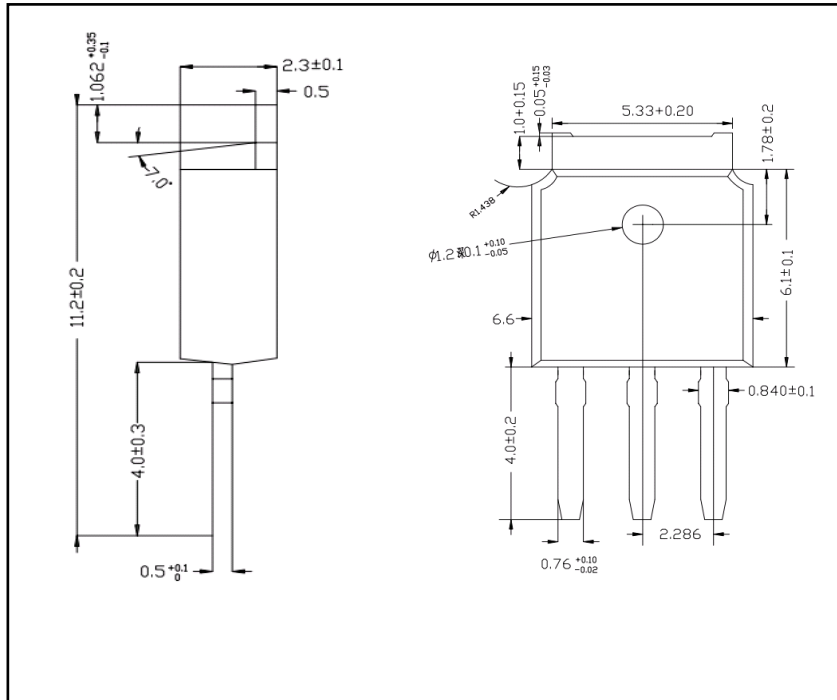
■ TYPICAL CHARACTERISTICS



TYPICAL CHARACTERISTICS(Cont.)



■ TO-251 PACKAGE OUTLINE DIMENSIONS



Technical drawing of a mechanical part, showing front and side views with dimensions.

Front View Dimensions:

- Top left corner: 1.0 ± 0.15 (width), $0.05^{+0.15}_{-0.22}$ (height)
- Top center: 5.33 ± 0.20 (width)
- Top right corner: 1.78 ± 0.2 (height)
- Right side: 6.1 ± 0.1 (height)
- Bottom center: 2.286 (width)
- Bottom left corner: $0.76^{+0.10}_{-0.02}$ (width)
- Bottom right corner: 0.840 ± 0.1 (width)
- Left side: $12 \pm 0.1^{+0.10}_{-0.05}$ (height)
- Top left corner: $R1.438$ (radius)

Side View Dimensions:

- Top left corner: $1.062^{+0.35}_{-0.1}$ (width)
- Top right corner: 2.3 ± 0.15 (width)
- Top right corner: 0.5 (height)
- Left side: 10.2 ± 0.3 (height)
- Bottom left corner: 3.1 ± 0.3 (width)
- Bottom right corner: 1.65 (height)
- Bottom center: $0.5^{+0.1}_{-0}$ (width)
- Right side: $0 \sim 0.15$ (height)
- Right side: $0 \sim 5^\circ$ (angle)
- Top right corner: 7.0° (angle)