

PRODUCT CHARACTERISTICS

VDSS	700V
$R_{DS(on)max}(V_{GS}=10V)$	1.4Ω
Qg@type	35nC
ID	7A

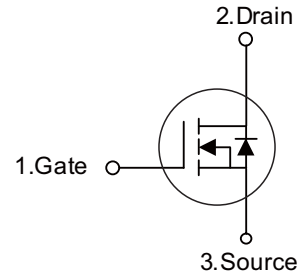
APPLICATIONS

- High frequency switching mode power supply
- Electronic ballast
- UPS

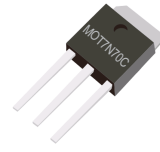
FEATURES

- * $R_{DS(ON)} < 1.4\Omega$ @ $V_{GS}=10V$, $I_D=3.5A$
- * Fast Switching
- * With 100% Avalanche Tested

Symbol



TO-252



TO-251

ORDER INFORMATION

Order codes		Package	Packing
Halogen-Free	Halogen		
N/A	MOT7N70D	TO-252	2500 pieces /Reel
N/A	MOT7N70C	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}	700	V
Gate-Source Voltage		V_{GSS}	±30	V
Drain Current	Continuous	I_D	7	A
	Pulsed (Note 2)	I_{DM}	14	A
Avalanche Energy	Single Pulsed (Note 3)	E_{AS}	480	mJ
Peak Diode Recovery dv/dt (Note 4)		dv/dt	4.5	V/ns
Power Dissipation		P_D	120	W
Junction Temperature		T_J	+150	°C
Storage Temperature Range		T_{STG}	-55 ~ +150	°C

Notes: 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. Repetitive Rating : Pulse width limited by maximum junction temperature.

3. $L=60\text{mH}$, $I_{AS}=4.0\text{A}$, $V_{DD}=50\text{V}$, $R_G=25\Omega$, Starting $T_J=25^\circ\text{C}$

4. $I_{SD} \leq 7.0\text{A}$, $di/dt \leq 200\text{A}/\mu\text{s}$, $V_{DD} \leq BV_{DSS}$, Starting $T_J=25^\circ\text{C}$

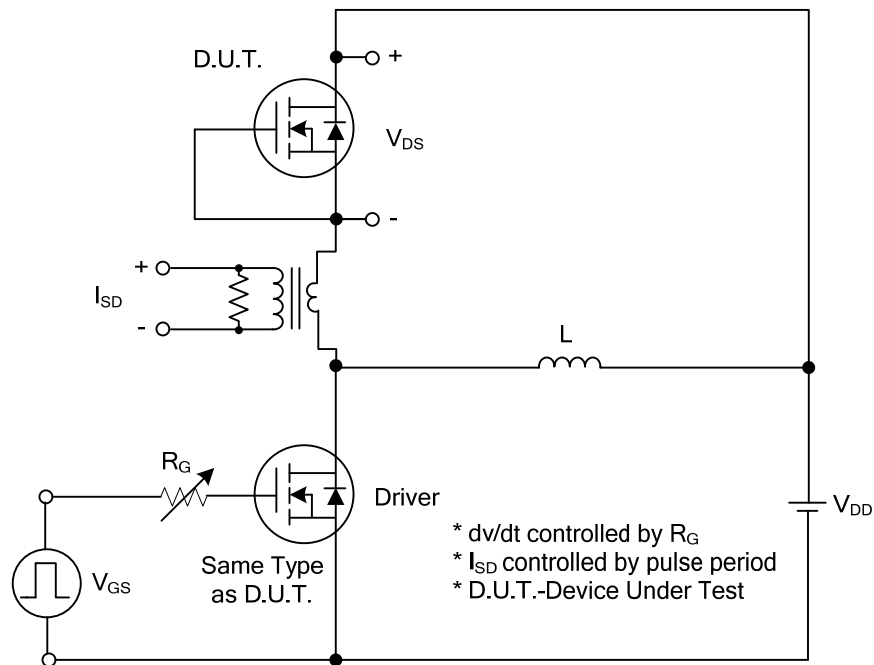
■ ELECTRICAL CHARACTERISTICS ($T_C = 25^\circ\text{C}$, unless otherwise specified)

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage		BV _{DSS}	V _{GS} =0V, I _D =250μA	700			V
Drain-Source Leakage Current		I _{DSS}	V _{DS} =700V, V _{GS} =0V			10	μA
Gate-Source Leakage Current	Forward	I _{GSS}	V _{DS} =0V, V _{GS} =30V			100	nA
	Reverse		V _{DS} =0V, V _{GS} =-30V			-100	nA
ON CHARACTERISTICS							
Gate Threshold Voltage		V _{GS(TH)}	V _{DS} = V _{GS} , I _D =250μA	2.0		4.0	V
Drain-Source On-State Resistance		R _{DS(ON)}	V _{GS} =10V, I _D =3.5A			1.4	Ω
DYNAMIC PARAMETERS							
Input Capacitance		C _{ISS}	V _{GS} =0V, V _{DS} =25V, f=1.0MHz		868		pF
Output Capacitance		C _{OSS}			125		pF
Reverse Transfer Capacitance		C _{RSS}			30		pF
SWITCHING PARAMETERS							
Total Gate Charge (Note 1)		Q _G	V _{DS} =300V, V _{GS} =10V, I _D =7A , I _G =1mA (Note 1, 2)		35		nC
Gate to Source Charge		Q _{GS}			7.4		nC
Gate to Drain Charge		Q _{GD}			12.6		nC
Turn-ON Delay Time (Note 1)		t _{D(ON)}	V _{DD} =30V, V _{GS} =10V, I _D =0.5A, R _G =25Ω (Note 1, 2)		40		ns
Rise Time		t _R			102		ns
Turn-OFF Delay Time		t _{D(OFF)}			264		ns
Fall-Time		t _F			172		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS							
Maximum Body-Diode Continuous Current		I _S				7	A
Maximum Body-Diode Pulsed Current		I _{SM}				14	A
Drain-Source Diode Forward Voltage (Note 1)		V _{SD}	I _S =7.0A, V _{GS} =0V			1.4	V
Body Diode Reverse Recovery Time (Note 1)		t _{rr}	I _S =7.0A, V _{GS} =0V,		420		ns
Body Diode Reverse Recovery Charge		Q _{rr}	dl _F /dt=100A/μs		4		μC

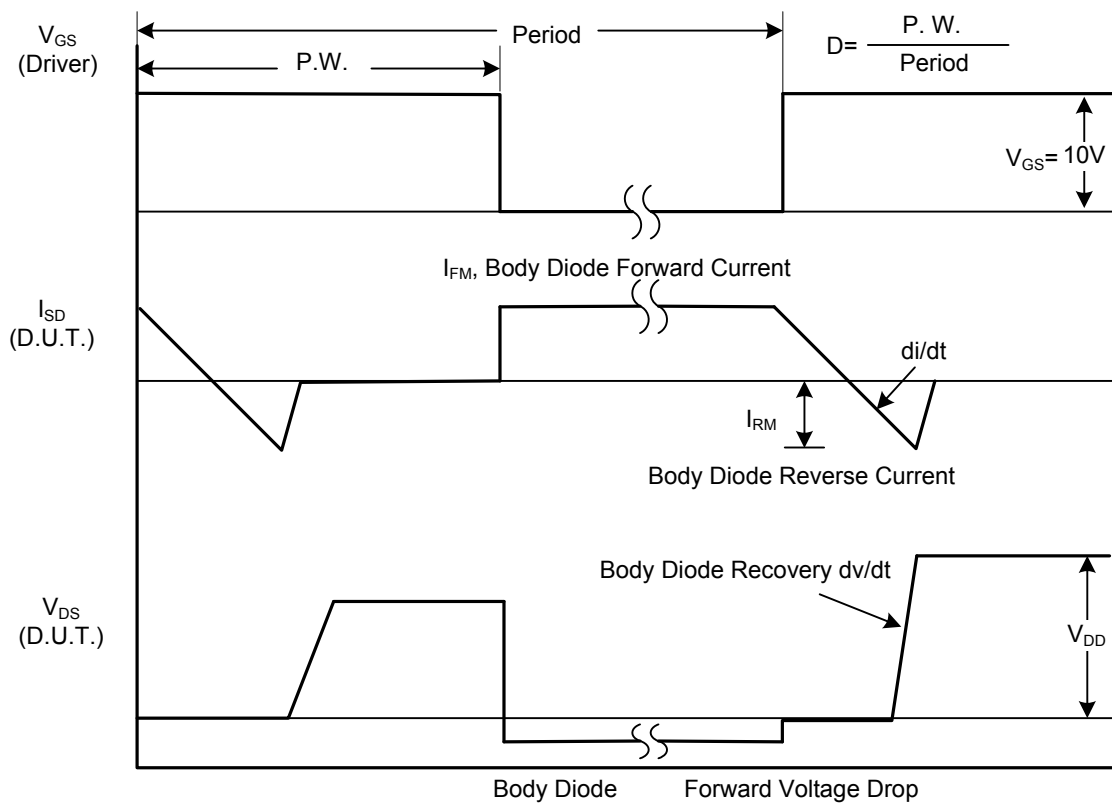
Notes: 1. Pulse Test : Pulse width $\leq 300\mu s$, Duty cycle $\leq 2\%$.

2. Essentially independent of operating temperature.

■ TEST CIRCUITS AND WAVEFORMS

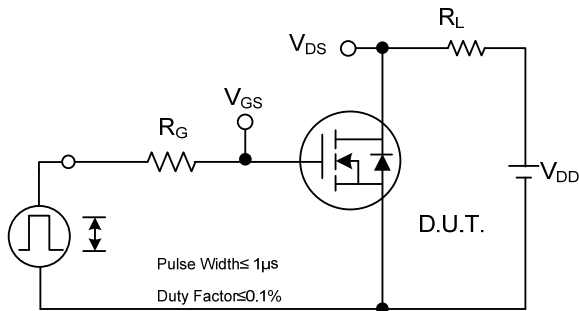


Peak Diode Recovery dv/dt Test Circuit

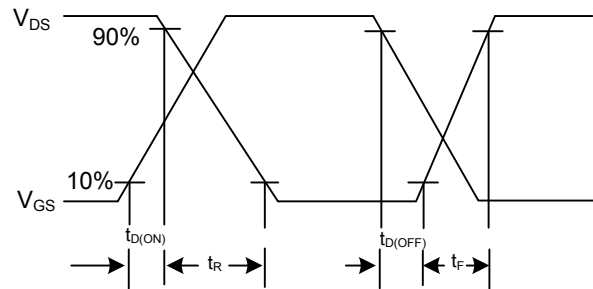


Peak Diode Recovery dv/dt Waveforms

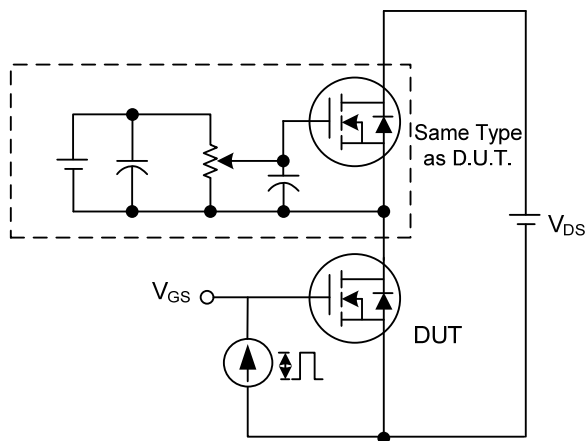
■ TEST CIRCUITS AND WAVEFORMS(Cont.)



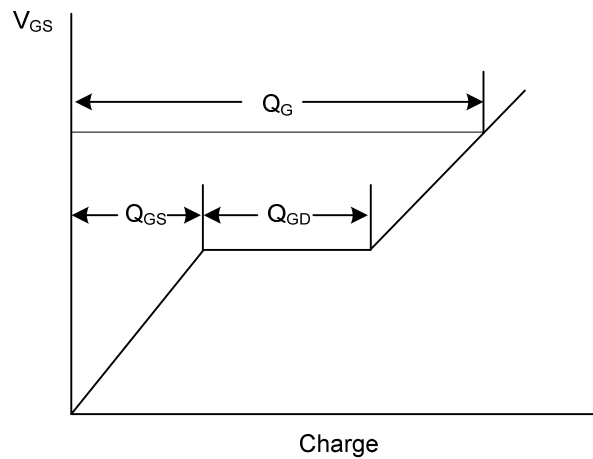
Switching Test Circuit



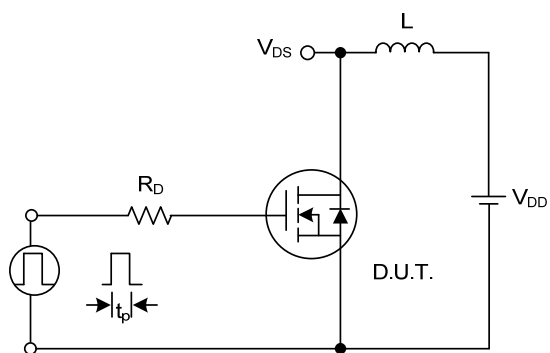
Switching Waveforms



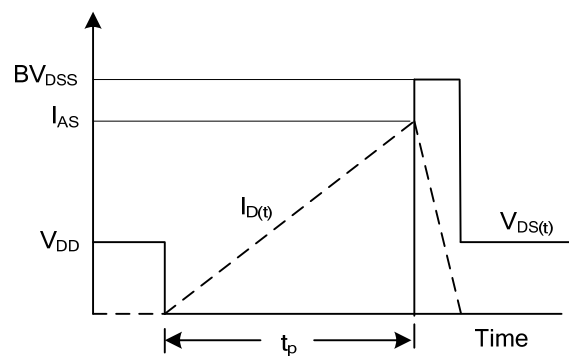
Gate Charge Test Circuit



Gate Charge Waveform

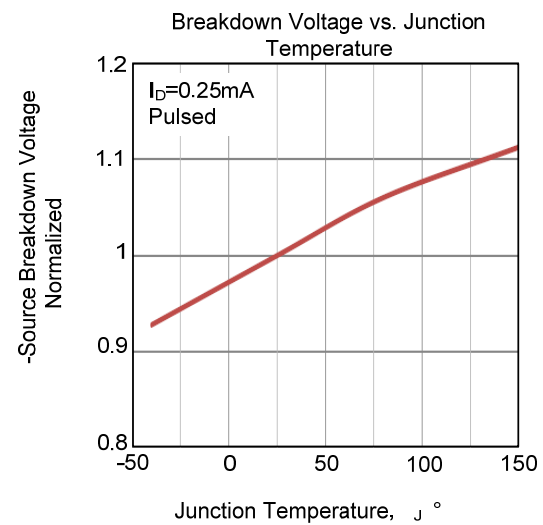
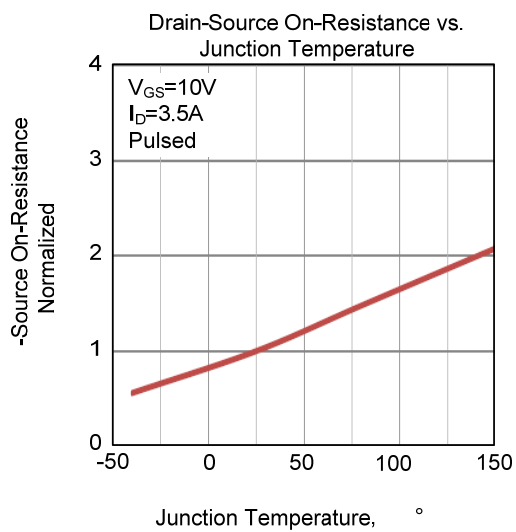
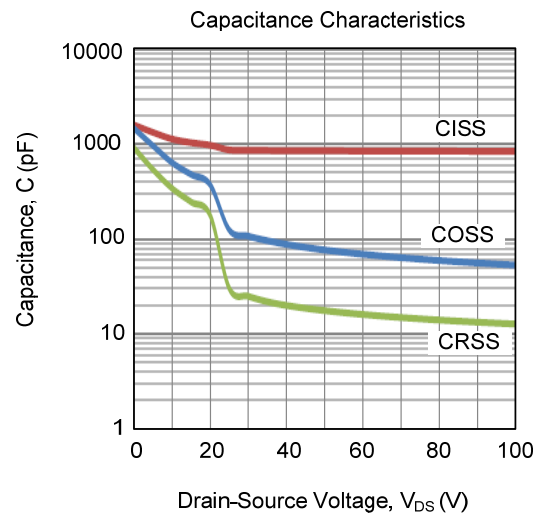
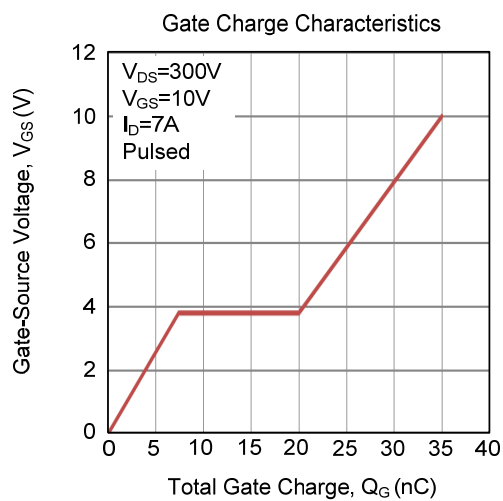
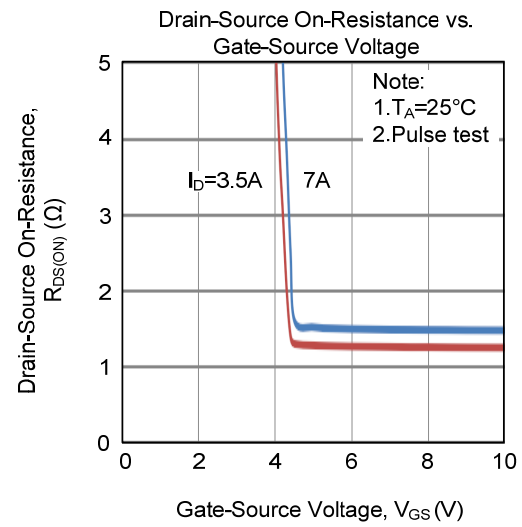
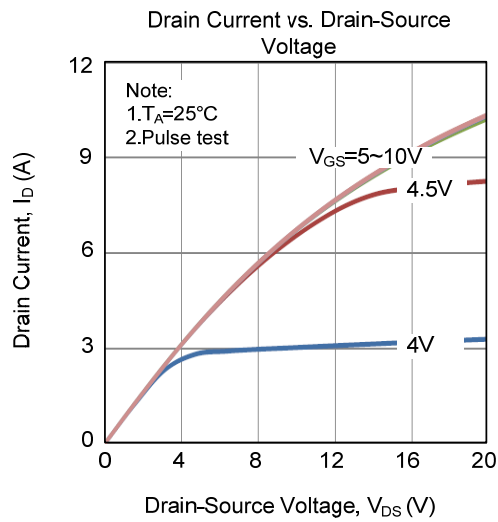


Unclamped Inductive Switching Test Circuit

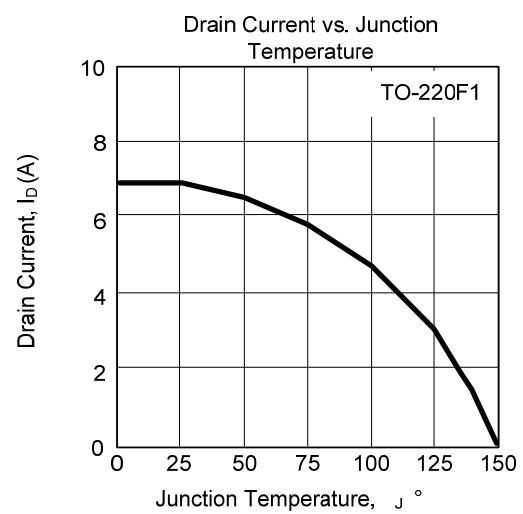
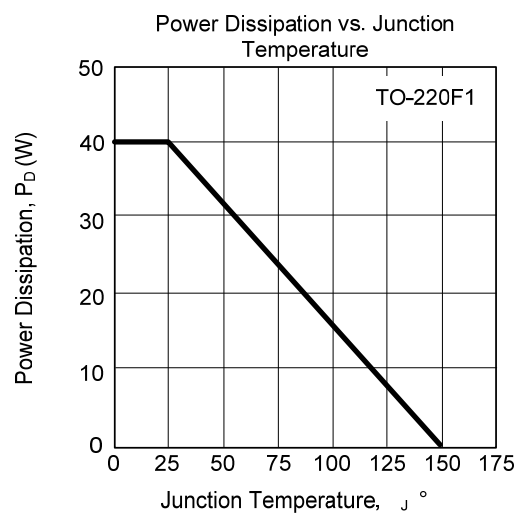
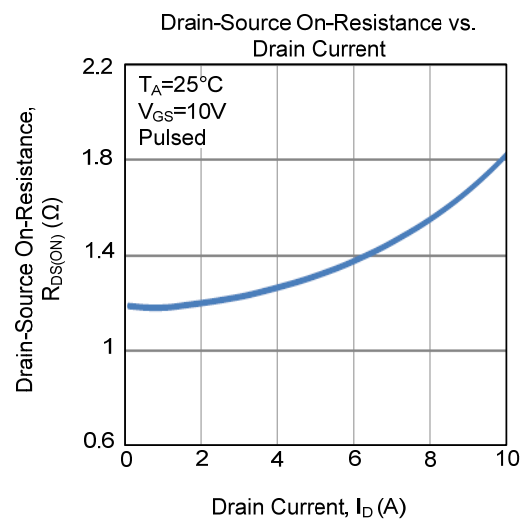
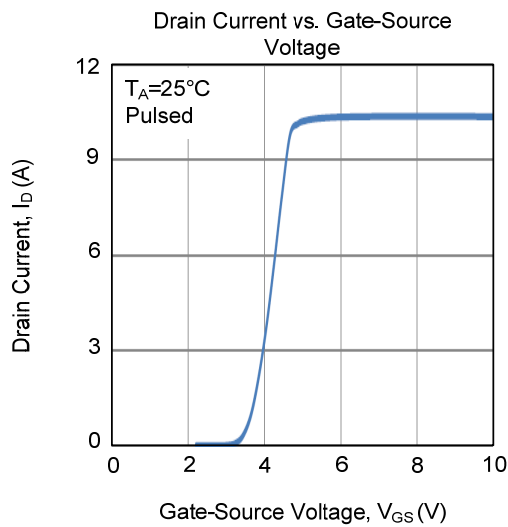
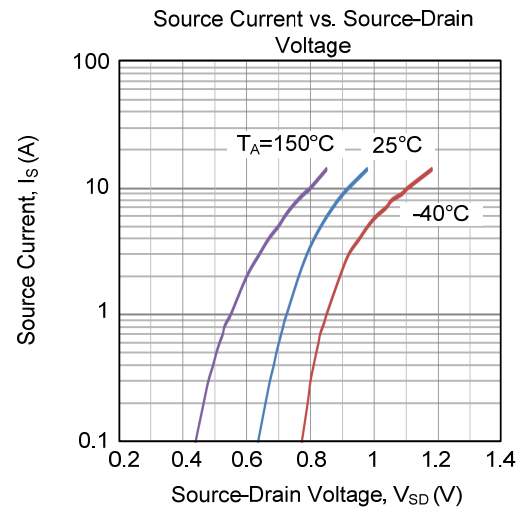
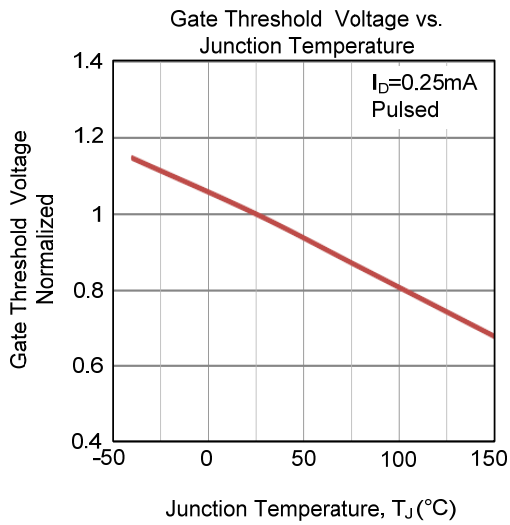


Unclamped Inductive Switching Waveforms

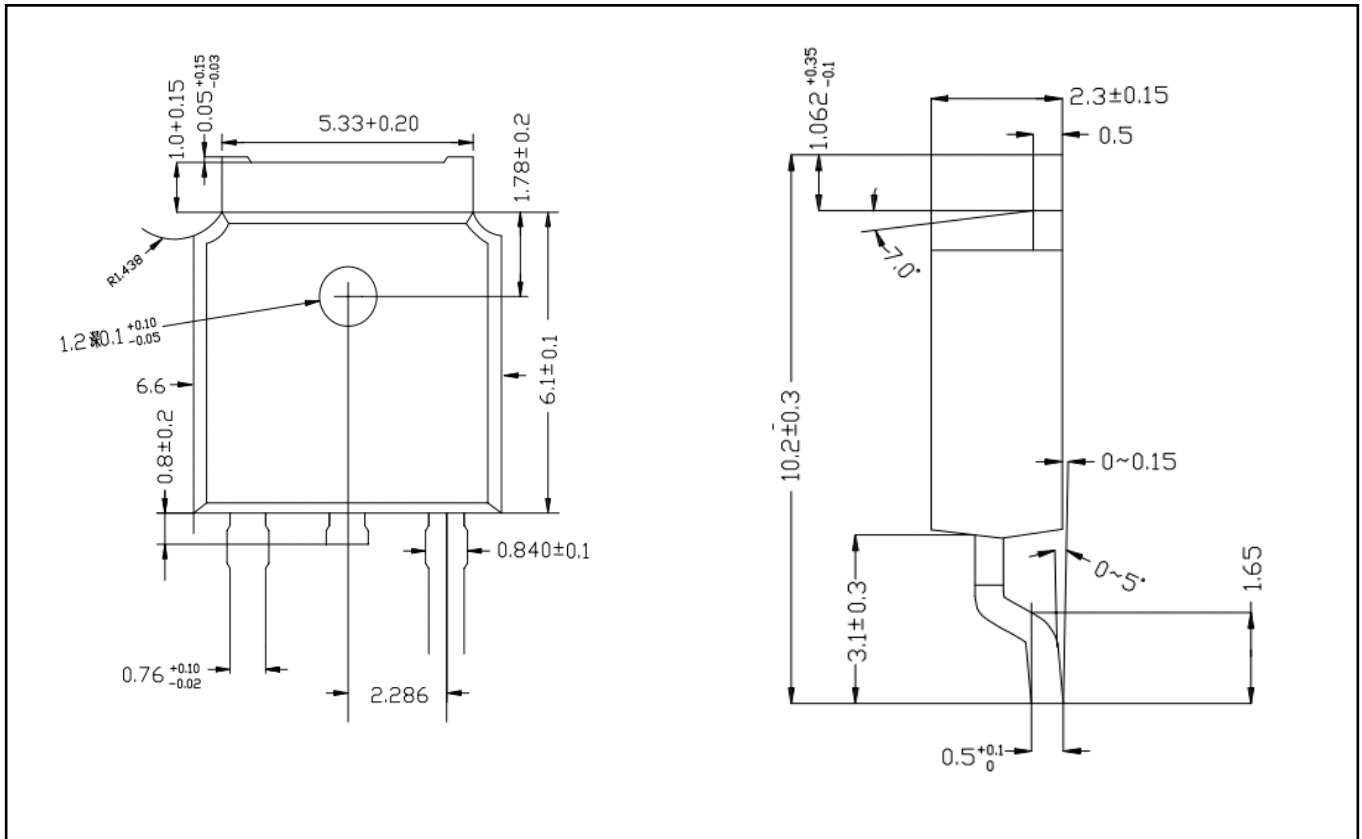
■ TYPICAL CHARACTERISTICS



TYPICAL CHARACTERISTICS(Cont.)



■ TO-252-2L PACKAGE OUTLINE DIMENSIONS



■ TO-251-3L PACKAGE OUTLINE DIMENSIONS

