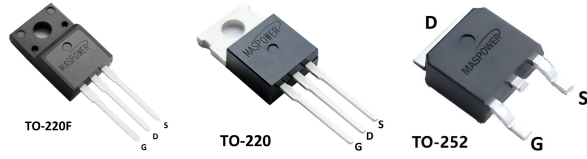


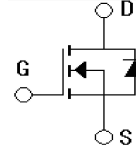
Features

- $V_{DS}=1000V, I_D=10A$
- Low C_{rss}
- Low gate charge
- Improved dv/dt capability



Applications

- Switching applications



Absolute Ratings ($T_C=25^\circ C$)

Parameter	Symbol		Limit	Unit
Drain-Source Voltage	V _{DSS}		1000	V
Transient Gate-Source Voltage	V _{GSM}		±30	V
Continuous Gate-Source Voltage	V _{GSS}		±20	V
Drain Current-continuous	I _D	T _C =25℃	10	A
		T _C =100℃	6.7	
Drain Current-pulse ⁽¹⁾	I _{DM}		40	A
Max current during repetitive or single pulse avalanche ⁽¹⁾	I _{AR}		6	A
Single Pulsed Avalanche Energy ⁽²⁾	E _{AS}		360	mJ
Maximum Power Dissipation (TO-220F)	P _D	T _C =25℃	36	W
		T _C =100℃	14	W
Maximum Power Dissipation (TO-220)	P _D	T _C =25℃	183	W
		T _C =100℃	73	W
Maximum Power Dissipation (TO-252)	P _D	T _C =25℃	83	W
		T _C =100℃	33	W
Operating and Storage Temperature Range	T _J ,T _{STG}		-55~+150	℃
Soldering temperature, wave soldering only allowed at leads.(1.6mm for 10s)	T _L		260	

Electrical Characteristics($T_{CASE}=25^\circ C$ unless otherwise specified)

Parameter	Symbol	Tests conditions	Min	Type	Max	Units
Drain-Source Breakdown Voltage	BV_{DSS}	$I_D=250\mu A, V_{GS}=0V$	1000	-	-	V
Zero Gate Voltage Drain	I_{DSS}	$V_{DS}=V_{DSS}, T_C=25^\circ C$	-	-	1	μA

Current		$V_{GS}=0V$, $T_c=125^{\circ}C$	-	-	100	μA
Gate-Body Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 100	nA
On-Characteristics						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	3	4.1	5	V
Static Drain-Source On-Resistance ⁽³⁾	$R_{DS(ON)}$	$V_{GS}=10V, I_D=3A$	-	0.96	1.30	Ω
Forward Transconductance ⁽³⁾	g_{fs}	$V_{DS}=40V, I_D=3A$	-	10	-	S
Dynamic Characteristics						
Input capacitance	C_{iss}	$V_{DS}=100V$, $V_{GS}=0V$, $f=1.0MHz^{(4)}$	-	440	-	pF
Output capacitance	C_{oss}		-	30	-	pF
Reverse transfer capacitance	C_{rss}		-	1.5	-	pF
Switching-Characteristics						
Turn-On delay time	$t_{d(on)}$	$V_{DS}=500V, I_D=6A$, $V_{GS}=10V, R_G=25\Omega$	-	15	-	ns
Turn-On rise time	t_r		-	12	-	ns
Turn-Off delay time	$t_{d(Off)}$		-	31	-	ns
Turn-Off rise time	t_f		-	20	-	ns
Total Gate Charge	Q_g	$V_{DS}=500V, I_D=6A$, $V_{GS}=10V^{(4)}$	-	15	-	nC
Gate-Source charge	Q_{gs}		-	4	-	nC
Gate-Drain charge	Q_{gd}		-	8	-	nC
Drain-Source Diode Characteristics						
Maximum Continuous Drain-Source Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=1A$	-	0.76	1.2	V
Diode Forward Current	I_S		-	-	10	A
Reverse recovery time	T_{rr}	$I_S=6A, di_F/dt=100A/\mu s$ $V_R=100V, V_{GS}=0V$	-	332	-	ns
Reverse recovery charge	Q_{rr}		-	3700	-	nC
Reverse recovery current	I_{rr}		-	19	-	A

Thermal Characteristics

Parameter	Symbol	Value			Unit
		TO-220F	TO-220	TO-252	
Thermal Resistance, junction to Case, Max	$R_{th(j-C)}$	3.4	0.68	1.50	$^{\circ}C/W$
Thermal Resistance, junction to Ambient, Max	$R_{th(j-A)}$	63.5	52	53	$^{\circ}C/W$

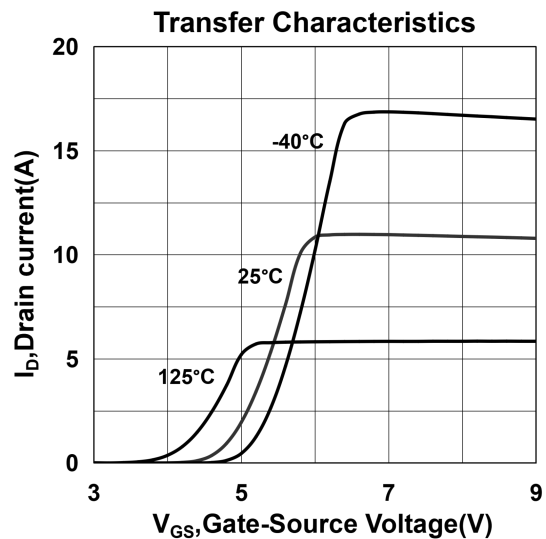
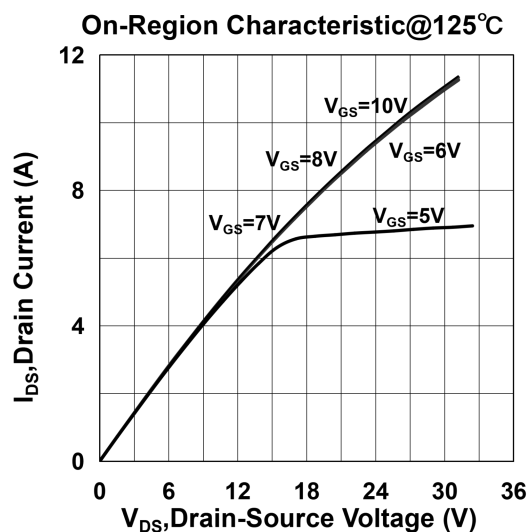
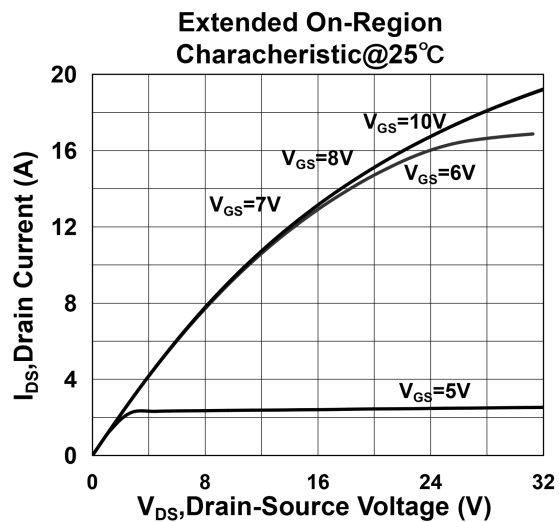
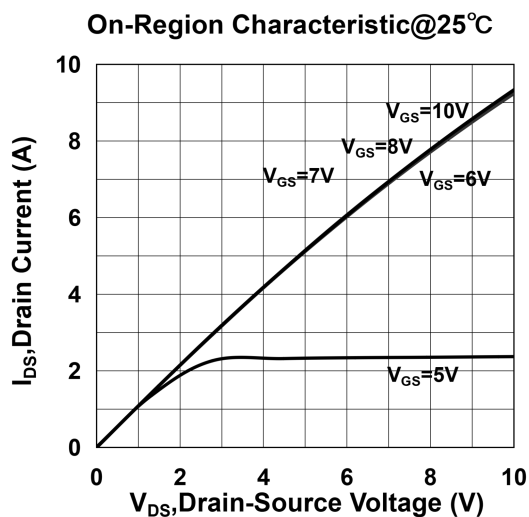
Order Information

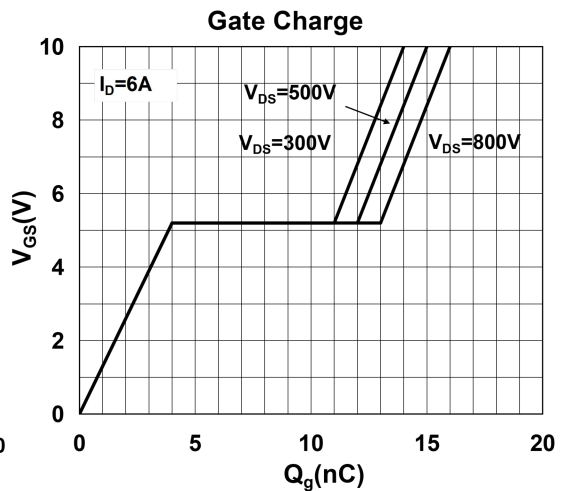
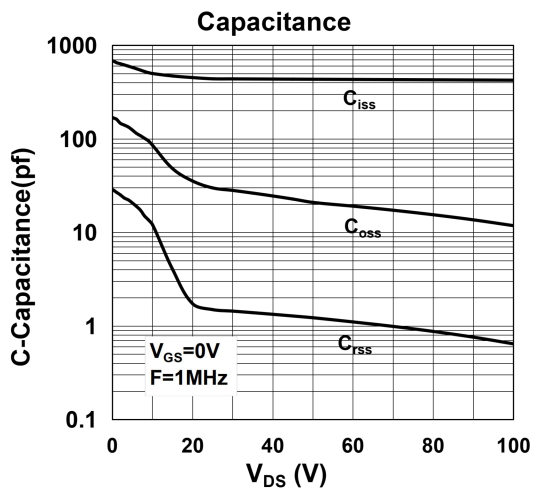
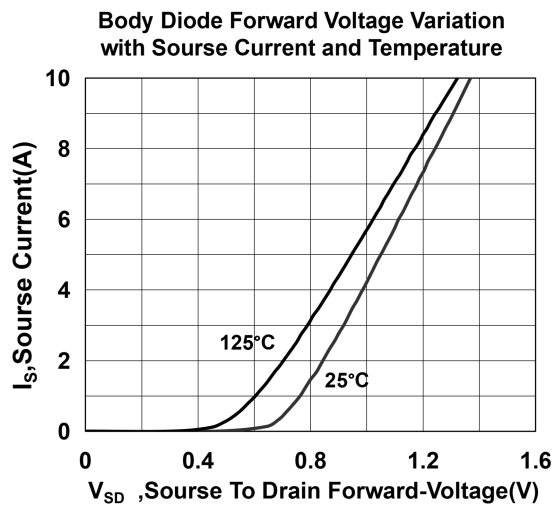
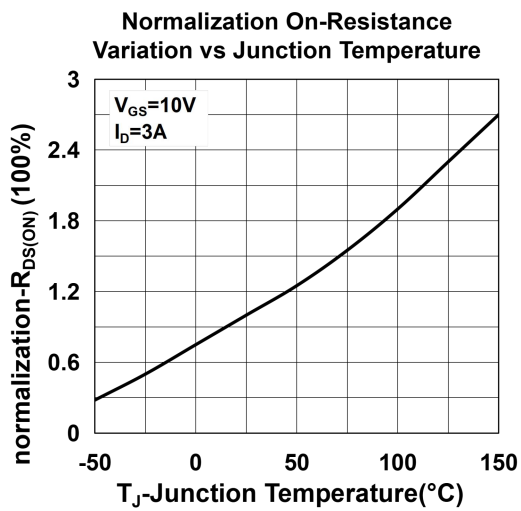
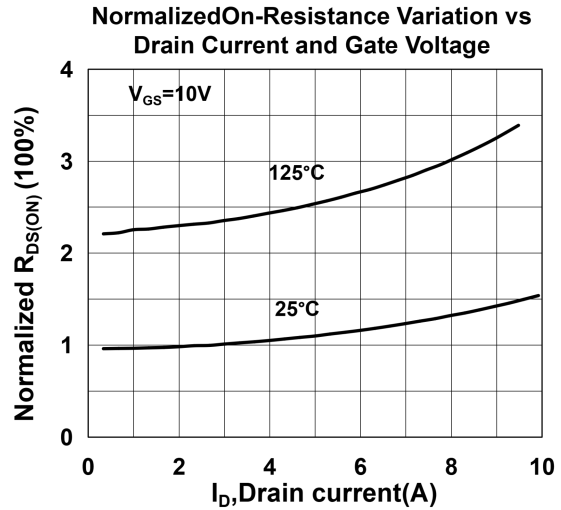
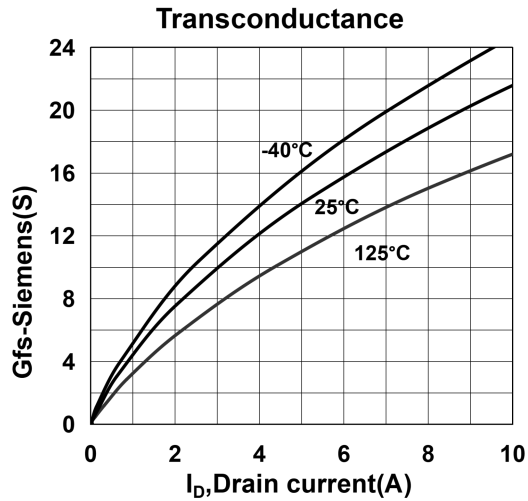
Order codes	Package	Packaging
MS10N100HCT1	T0-220F	Tube
MS10N100HCT0	T0-220	Tube
MS10N100HCD0	T0-252	Tube

Notes:

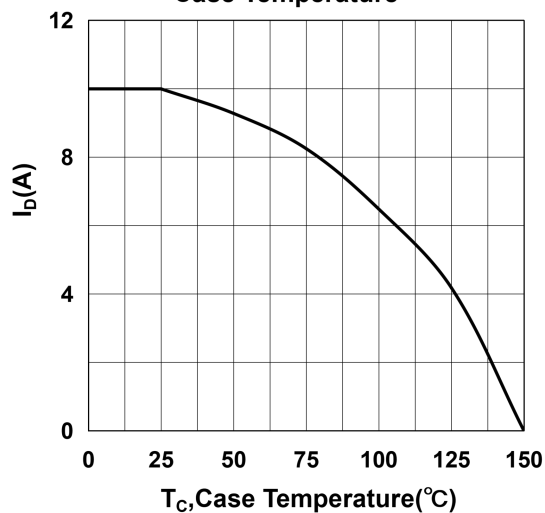
- 1: Pulse width limited by maximum junction temperature
- 2: $L=10\text{mH}$, $I_{AS}=I_{AR}$, $V_{DD}=50\text{V}$, $R_G=25\Omega$, Starting $T_J=25^\circ\text{C}$
- 3: Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$
- 4: Essentially independent of operating temperature

Electrical Characteristics

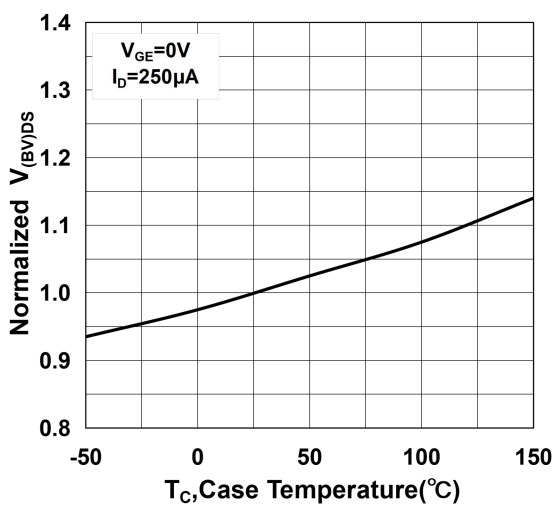




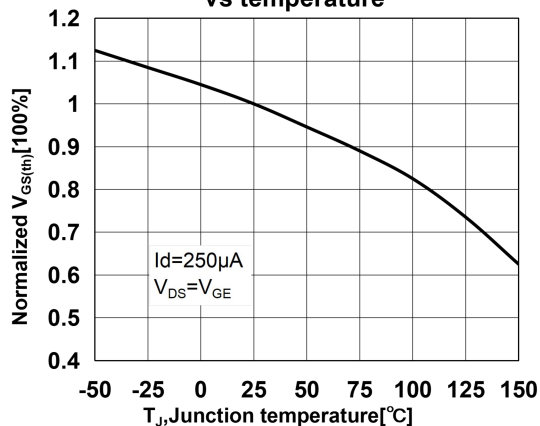
Maximum Drain Current vs Case Temperature



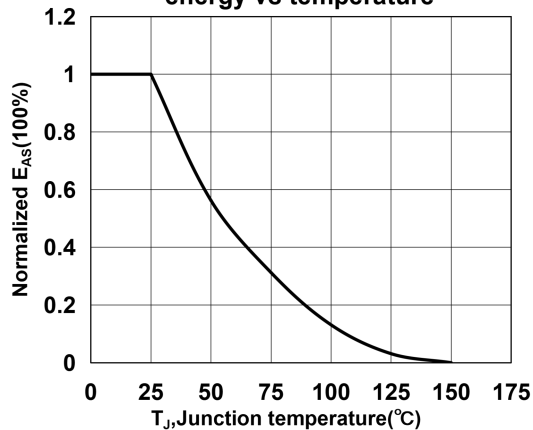
Normalized $V_{(BV)DS}$ vs temperature



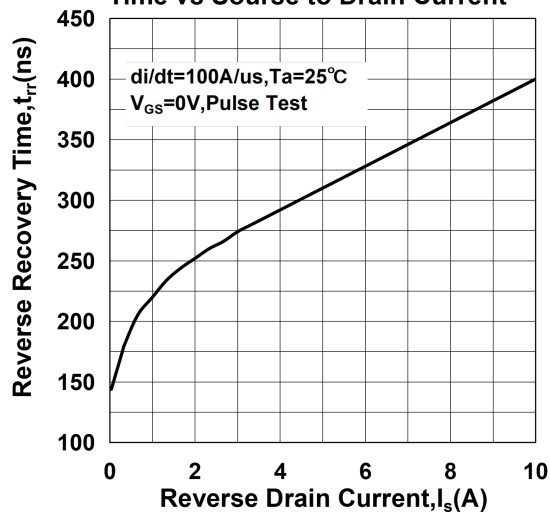
Normalized gate threshold voltage vs temperature



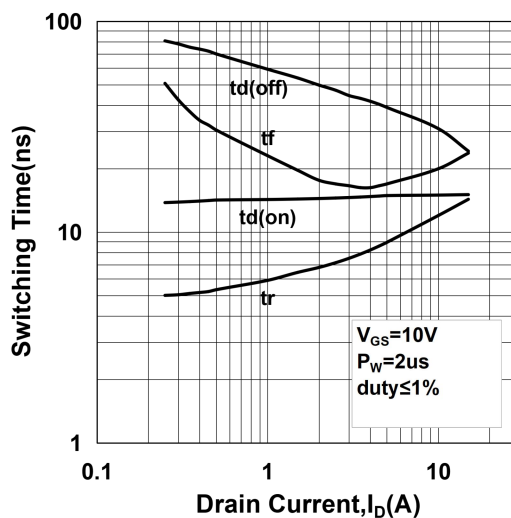
Normalized maximum avalanche energy vs temperature



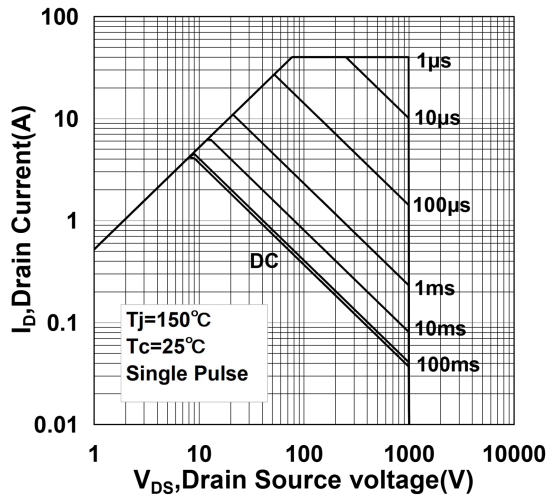
Body Diode Reverse Recovery Time vs Source to Drain Current



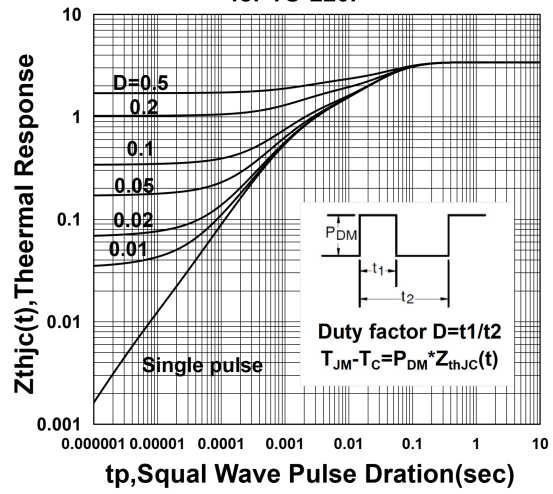
Switching Characteristics



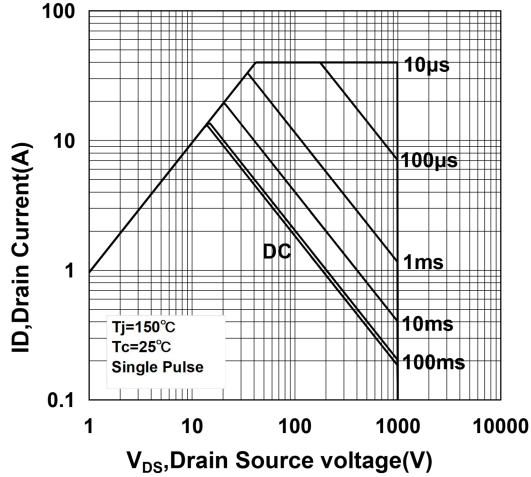
Safe Operating Area for TO-220F



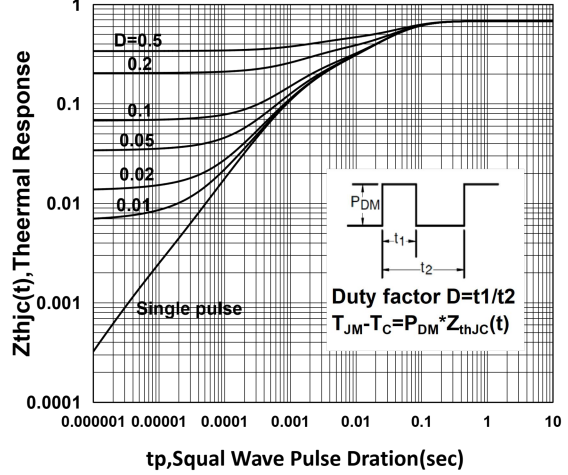
Transient response Curve for TO-220F



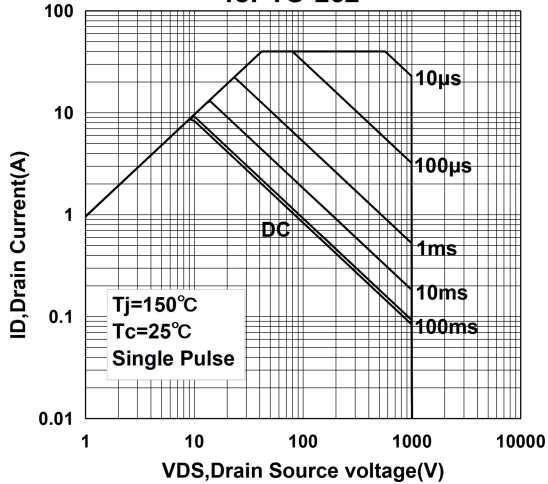
Safe Operating Area for TO-220C



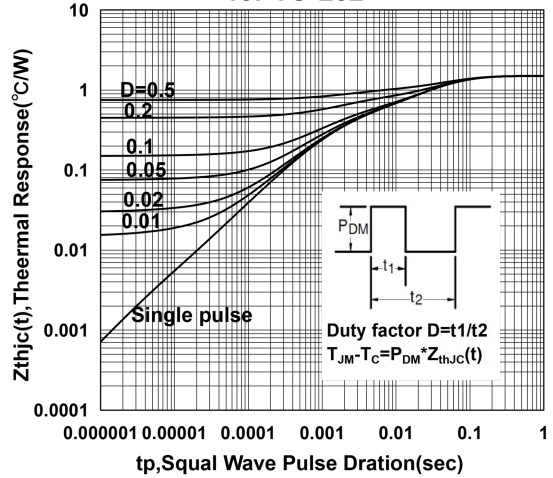
Transient response Curve for TO-220C



Safe Operating Area for TO-252



Transient response Curve for TO-252



Package Mechanical Data

