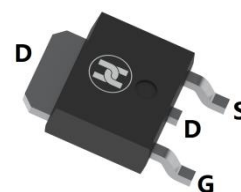
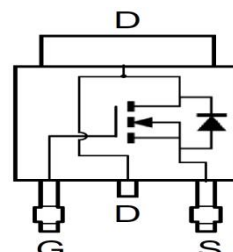


N-CHANNEL HIGH VOLTAGE MOSFET

FEATURES

- $V_{DS}=100V, R_{DS(ON)} \leq 80m\Omega @ V_{GS}=10V, I_D=17A$
- Low $R_{DS(ON)}$ – ensures on state losses are minimized
- For Power Management Functions and DC-DC Converters Applications
- Surface Mount device


TO-252


MECHANICAL DATA

- Case: TO-252
- Case Material: Molded Plastic. UL flammability
- Classification Rating: 94V-0
- Weight: 0.33 grams (approximate)

MAXIMUM RATINGS ($T_A = 25^\circ C$ unless otherwise noted)

Parameter		Symbol	Value	Unit
Drain-source voltage		V_{DS}	100	V
Gate-source voltage		V_{GS}	± 20	V
Continuous drain current, $V_{GS} = 10V(1)$	$T_C = +25^{\circ}C$	I_D	17	A
	$T_C = +70^{\circ}C$		13	A
Pulsed drain current (10 μs Pulse, Duty Cycle = 1%)		I_{DM}	20	A
Avalanche Current, $L = 1mH$		I_{AS}	7.5	A
Avalanche Energy, $L = 1mH$		E_{AS}	28.5	mJ
Power dissipation(1)	$T_C = +25^{\circ}C$	P_D	34	W
	$T_C = +70^{\circ}C$		22	
Thermal resistance from Junction to ambient (1)		$R_{\theta JA}$	51	$^{\circ}C/W$
Thermal Resistance, Junction to Case (1)		$R_{\theta JC}$	3.6	$^{\circ}C/W$
Operating and Storage temperature		T_J, T_{STG}	-55 ~ +150	$^{\circ}C$

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ C$ unless otherwise specified)

Parameter	Symbol	Min	Typ	Max	Unit	Conditions
Drain-Source breakdown voltage(2)	$V_{(BR)DSS}$	100			V	$V_{GS}=0V, I_D=250\mu A$
Zero gate voltage drain current(2)	I_{DSS}			1	μA	$V_{DS}=80V, V_{GS}=0V$
Gate-body leakage current(2)	I_{GSS}			± 100	nA	$V_{DS}=0V, V_{GS}=\pm 20V$
Gate-threshold voltage (2)	$V_{GS(th)}$	1.5	2	3	V	$V_{DS}=V_{GS}, I_D=250\mu A$
Drain-source on-resistance (2)	$R_{DS(ON)}$		67	80	m Ω	$V_{GS}=10V, I_D=3.3A$
			69	99	m Ω	$V_{GS}=6V, I_D=3A$
Diode forward voltage (2)	V_{SD}		0.77		V	$I_S=3.2A, V_{GS}=0V$
Input capacitance (3)	C_{iss}		1172		pF	
Output capacitance(3)	C_{oss}		40.8		pF	$V_{DS}=50V, V_{GS}=0V, f=1MHz$
Reverse transfer capacitance(3)	C_{rss}		31.3		pF	
Gate Resistance(3)	R_g		1.6		Ω	$V_{DS}=0V, V_{GS}=0V, f=1MHz$
Turn-on delay time(3)	$t_{d(on)}$		5.4		nS	
Turn-on rise time(3)	t_r		5.9		nS	$V_{DD}=50V, I_D=3.3A,$ $R_g=6.0\Omega$
Turn-off delay time(3)	$t_{d(off)}$		20		nS	
Turn-off fall time(3)	t_f		7.3		nS	
Total Gate Charge(3)	Q_g		12.2		nC	$V_{DS}=50V, V_{GS}=4.5V, I_D=3.3A$
Total gate charge(3)	Q_g		25.2		nC	
Gate-source charge(3)	Q_{gs}		5.3		nC	$V_{DD}=50V, V_{GS}=10V, I_D=3.3A$
Gate-drain charge(3)	Q_{gd}		5.9		nC	
Body Diode Reverse Recovery Time(3)	t_{rr}		19.7		nS	
Body Diode Reverse Recovery Charge(3)	Q_{rr}		15.9		nC	$I_S=3.3A, di/dt=100A/\mu s$

Notes:1. Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper plate.

2. Short duration pulse test used to minimize self-heating effect.

3. Guaranteed by design. Not subject to production testing.

N-CHANNEL HIGH VOLTAGE MOSFET

Typical Characteristics

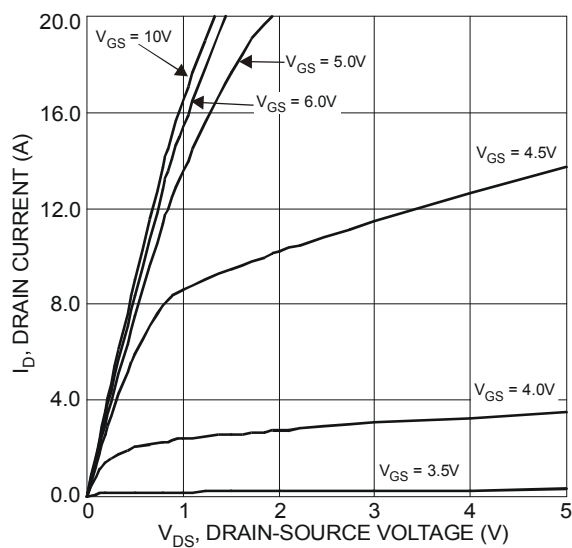


Figure 1 Typical Output Characteristics

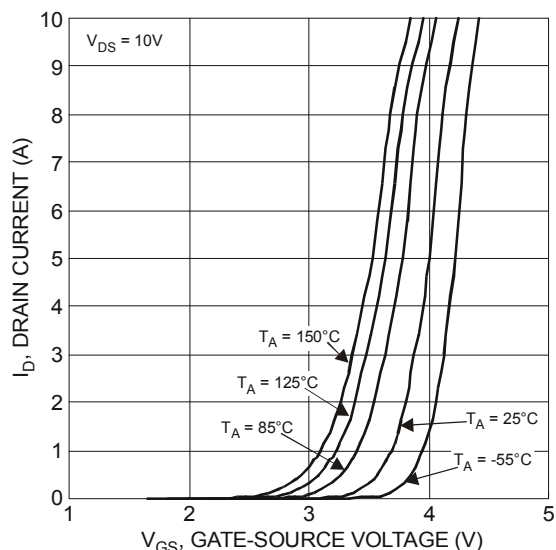


Figure 2 Typical Transfer Characteristics

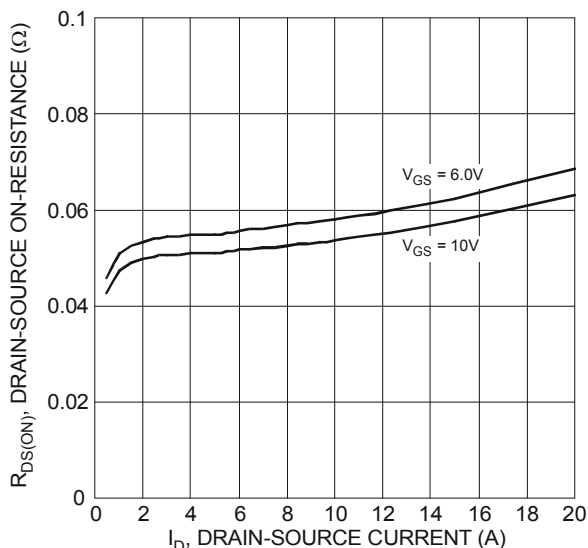


Figure 3 Typical On-Resistance vs. Drain Current and Gate Voltage

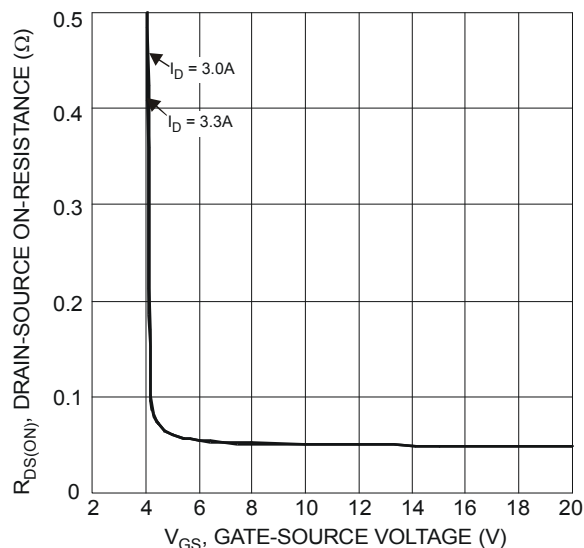


Figure 4 Typical Transfer Characteristics

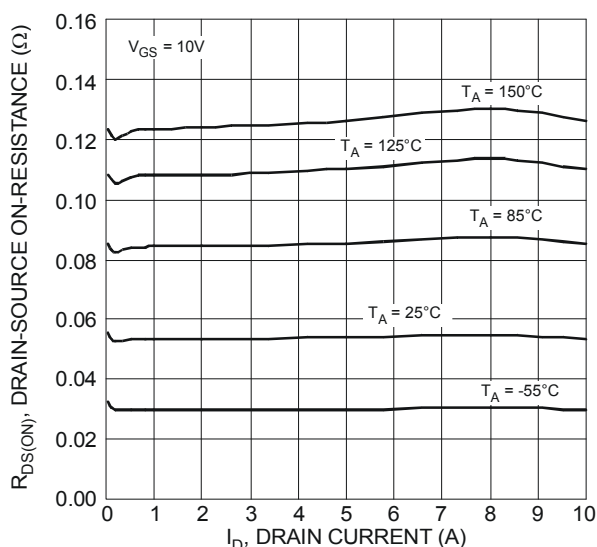


Figure 5 Typical On-Resistance vs. Drain Current and Temperature

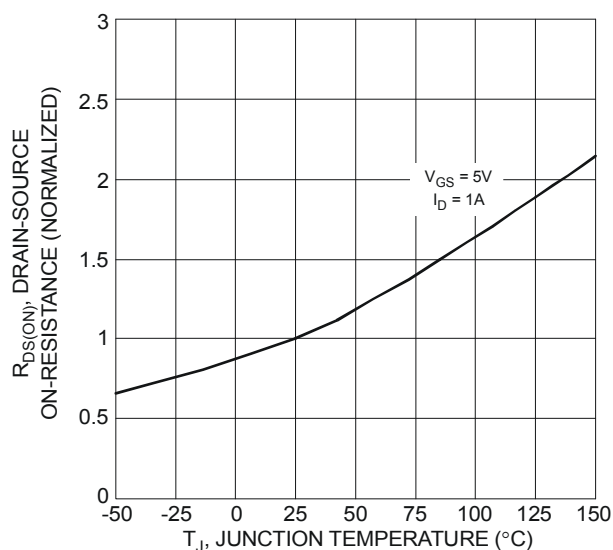


Figure 6 On-Resistance Variation with Temperature

N-CHANNEL HIGH VOLTAGE MOSFET

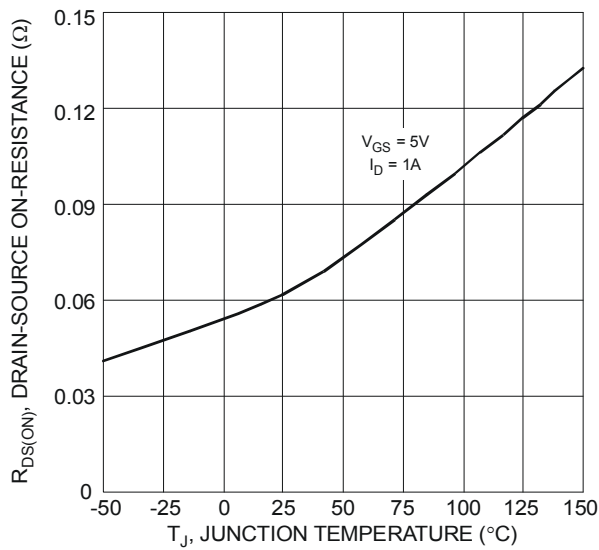


Figure 7 On-Resistance Variation with Temperature

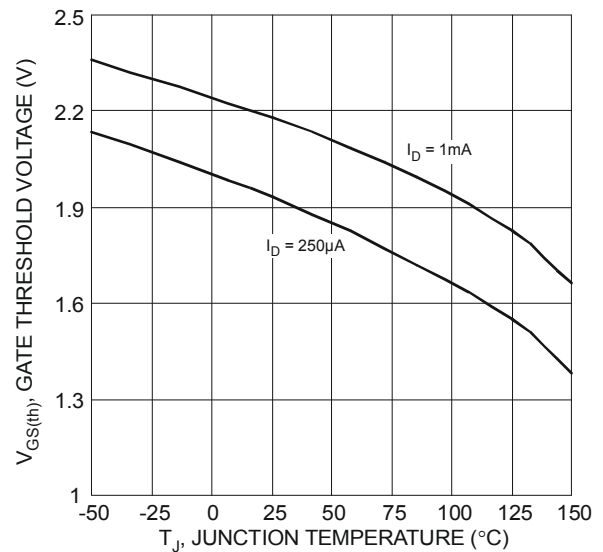


Figure 8 Gate Threshold Variation vs. Ambient Temperature

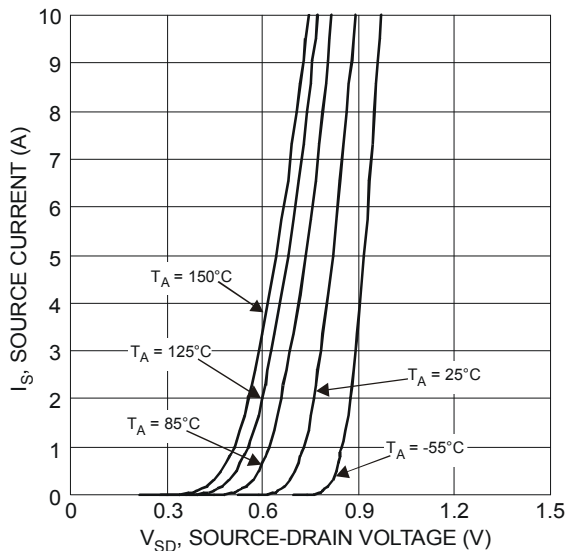


Figure 9 Diode Forward Voltage vs. Current

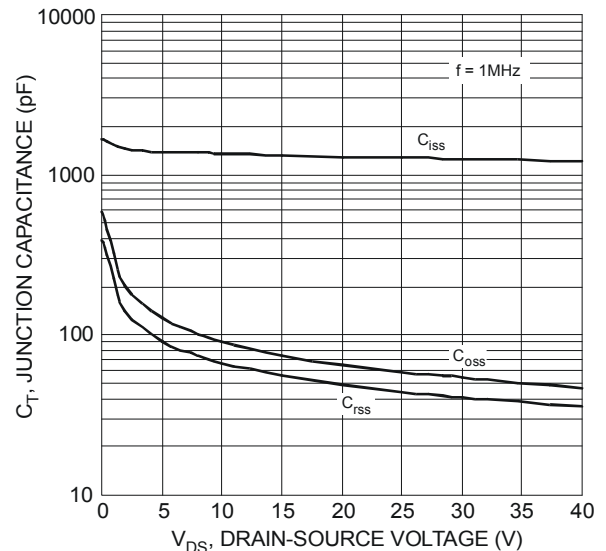


Figure 10 Typical Junction Capacitance

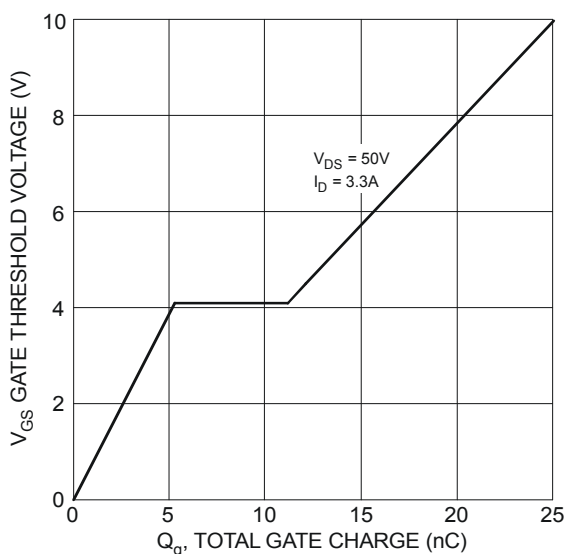


Figure 11 Gate Charge

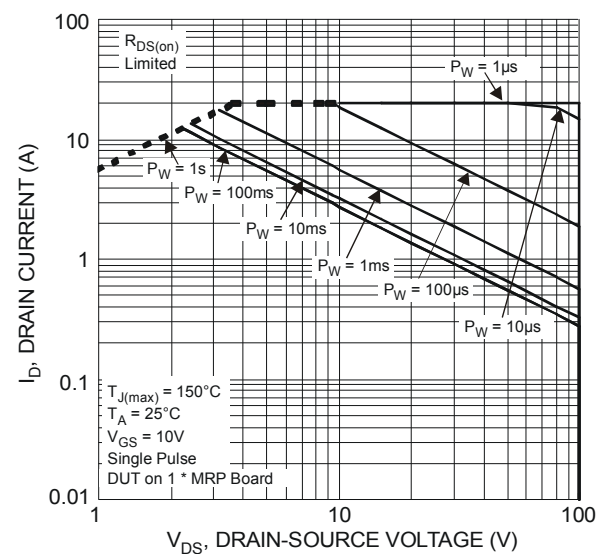
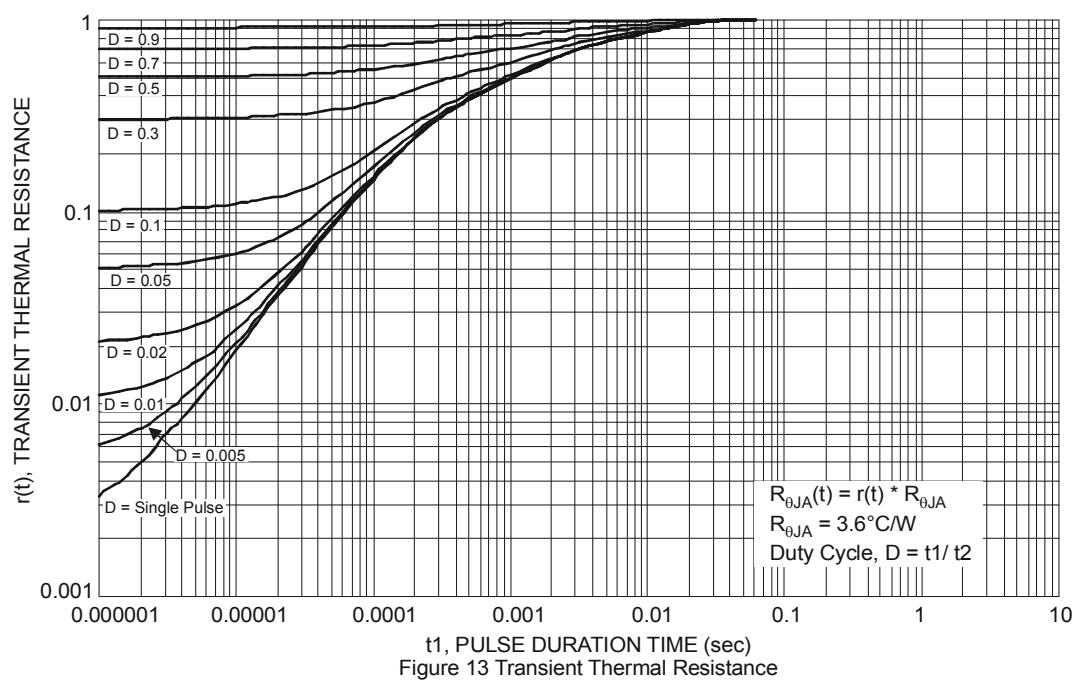


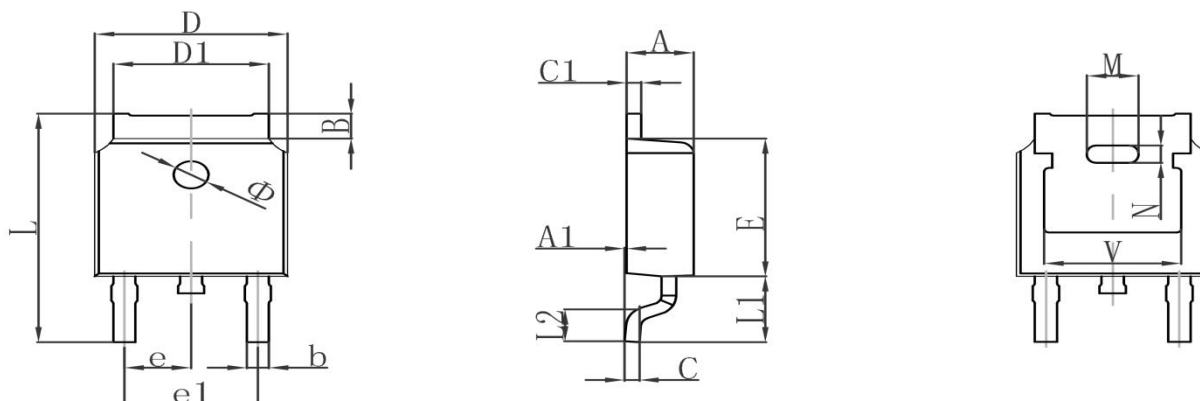
Figure 12 SOA, Safe Operation Area

N-CHANNEL HIGH VOLTAGE MOSFET



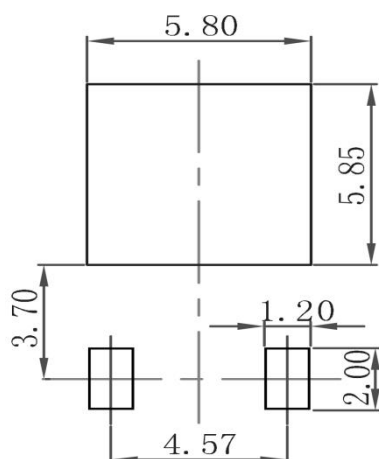
N-CHANNEL HIGH VOLTAGE MOSFET

TO-252 Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.380	0.087	0.094
A1	0.000	0.100	0.000	0.004
B	0.800	1.400	0.031	0.055
b	0.710	0.810	0.028	0.032
c	0.460	0.560	0.018	0.022
c1	0.460	0.560	0.018	0.022
D	6.500	6.700	0.256	0.264
D1	5.130	5.460	0.202	0.215
E	6.000	6.200	0.236	0.244
e	2.286TYP		0.090TYP	
e1	4.327	4.727	0.170	0.186
M	1.778REF		0.070REF	
N	0.762REF		0.018REF	
L	9.800	10.400	0.386	0.409
L1	2.9REF		0.114REF	
L2	1.400	1.700	0.055	0.067
V	4.830REF		0.190REF	
Φ	1.100	1.300	0.043	0.051

TO-252 Suggested Pad Layout



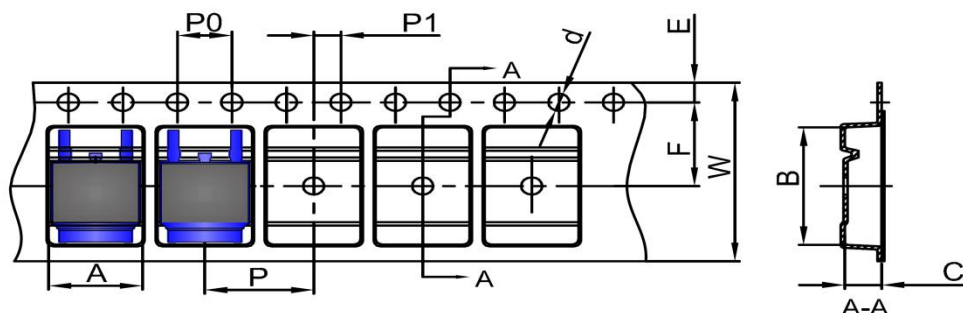
Note:

1. Controlling dimension: in millimeters
2. General tolerance: $\pm 0.05\text{mm}$
3. The pad layout is for reference purposes only

N-CHANNEL HIGH VOLTAGE MOSFET

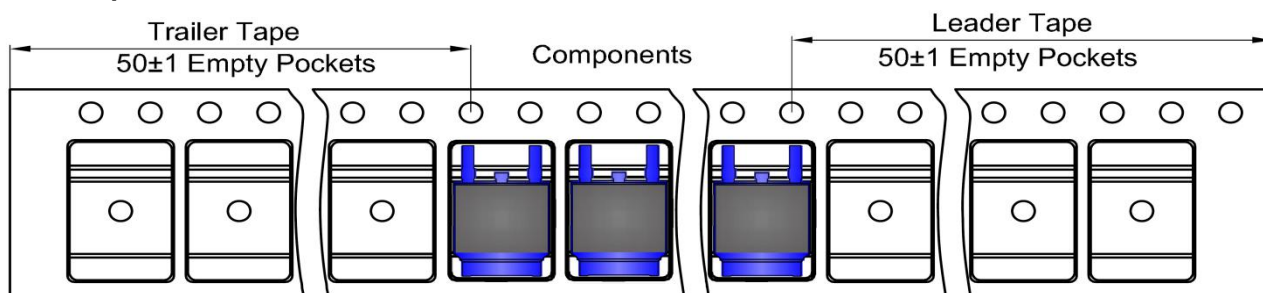
TO-252 Tape and Reel

TO-252 Embossed Carrier Tape

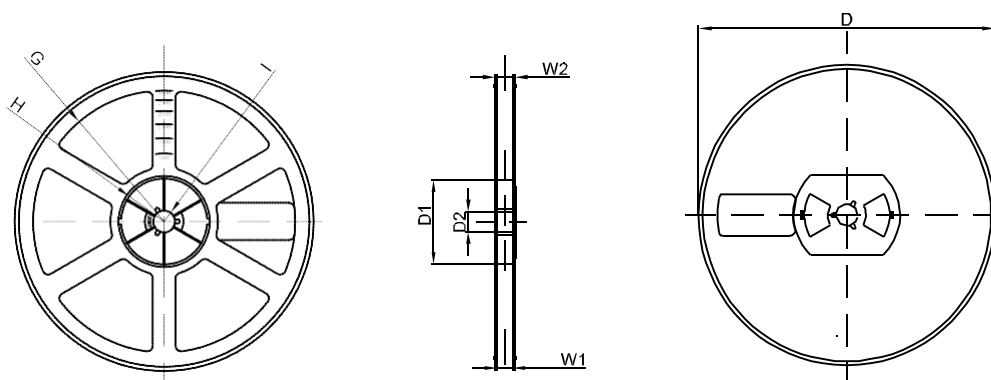


DIMENSIONS ARE IN MILLIMETER										
TYPE	A	B	C	d	E	F	P0	P	P1	W
TO-252	6.90	10.50	2.70	Ø1.55	1.75	7.50	4.00	8.00	2.00	16.00
TOLERANCE	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1

TO-252 Tape Leader and Trailer



TO-252 Reel



DIMENSIONS ARE IN MILLIMETER								
REEL OPTION	D	D1	D2	G	H	I	W1	W2
13" DIA	Ø330.00	100.00	Φ21.00	R151.00	R56.00	R6.50	16.40	21.00
TOLERANCE	±2	±1	±1	±1	±1	±1	±1	±1