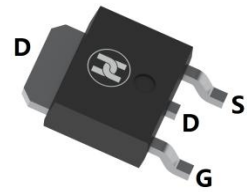


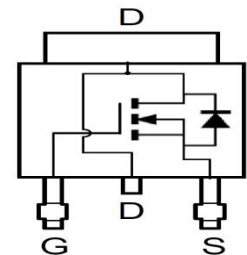
N-CHANNEL HIGH VOLTAGE MOSFET

FEATURES

- $V_{DS}=100V, R_{DS(ON)} \leq 140m\Omega @ V_{GS}=10V, I_D=12A$
- Low On-Resistance and Low Input Capacitance
- For Analog Switch, 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 ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-source voltage	V_{DS}	100	V
Gate-source voltage	V_{GS}	± 20	V
Continuous drain current, $V_{GS} = 10V(1)$	I_D	12	A
		7.5	A
Maximum Body Diode Forward Current (1)	I_S	4	A
Pulsed drain current (10 μ s Pulse, Duty Cycle = 1%)	I_{DM}	16	A
Avalanche Current, $L = 1.43mH, T_J = +25^\circ\text{C}$	I_{AS}	5.3	A
Avalanche Energy, $L = 1.43mH, T_J = +25^\circ\text{C}$	E_{AS}	20	mJ
Power dissipation(1)	P_D	42	W
		17	
Thermal resistance from Junction to ambient (1)	$R_{\theta JA}$	44	$^\circ\text{C/W}$
Thermal Resistance, Junction to Case (1)	$R_{\theta JC}$	3	$^\circ\text{C/W}$
Operating and Storage temperature	T_J, T_{STG}	-55 ~ +150	$^\circ\text{C}$

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ 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	$V_{DS}=100V, V_{GS}=0V$
Gate-body leakage current(2)	I_{GSS}			± 100	nA	$V_{DS}=0V, V_{GS}=\pm 20V$
Gate-threshold voltage (2)	$V_{GS(th)}$	1.0	2.0	3.0	V	$V_{DS}=V_{GS}, I_D=250\mu A$
Drain-source on-resistance (2)	$R_{DS(ON)}$		99	140	$m\Omega$	$V_{GS}=10V, I_D=5A$
			104	160	$m\Omega$	$V_{GS}=4.5V, I_D=5A$
Diode forward voltage (2)	V_{SD}		0.7	1.0	V	$I_S=10A, V_{GS}=0V$
Input capacitance (3)	C_{iss}		1167		pF	$V_{DS}=25V, V_{GS}=0V, f=1MHz$
Output capacitance(3)	C_{oss}		36		pF	
Reverse transfer capacitance(3)	C_{rss}		25		pF	
Gate Resistance(3)	R_g		1.3		Ω	$V_{DS}=0V, V_{GS}=0V, f=1MHz$
Turn-on delay time(3)	$t_{d(on)}$		10.5		nS	$V_{DD}=50V, I_D=12.8A, R_g=25\Omega$
Turn-on rise time(3)	t_r		11.1		nS	
Turn-off delay time(3)	$t_{d(off)}$		42.6		nS	
Turn-off fall time(3)	t_f		12.8		nS	$V_{DS}=80V, V_{GS}=4.5V, I_D=12.8A$
Total Gate Charge(3)	Q_g		4.9		nC	
Total gate charge(3)	Q_g		9.7		nC	
Gate-source charge(3)	Q_{gs}		2.0		nC	$V_{DS}=80V, V_{GS}=10V, I_D=12.8A$
Gate-drain charge(3)	Q_{gd}		2.0		nC	
Body Diode Reverse Recovery Time(3)	t_{rr}		30.3		nS	$V_{GS}=0V, I_S=12.8A, di/dt=100A/\mu s$
Body Diode Reverse Recovery Charge(3)	Q_{rr}		35.2		nC	

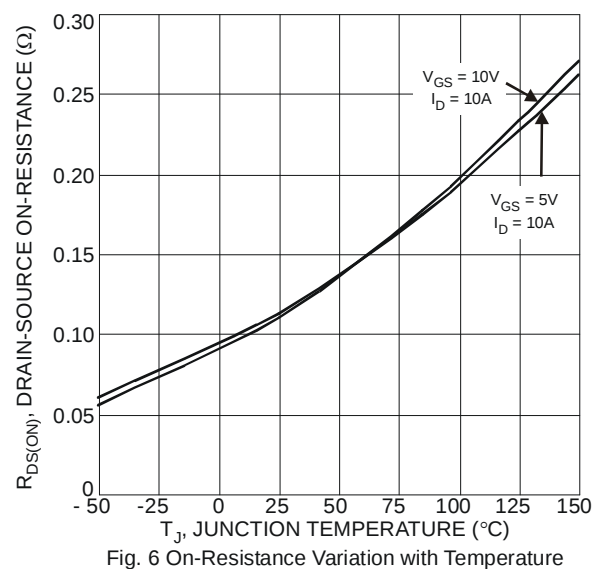
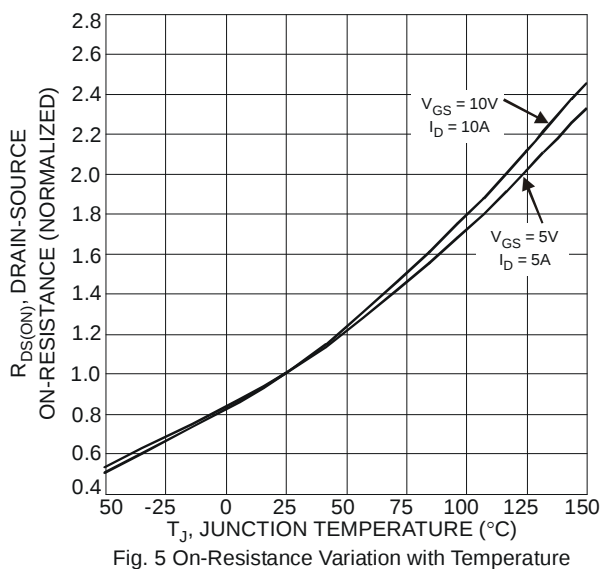
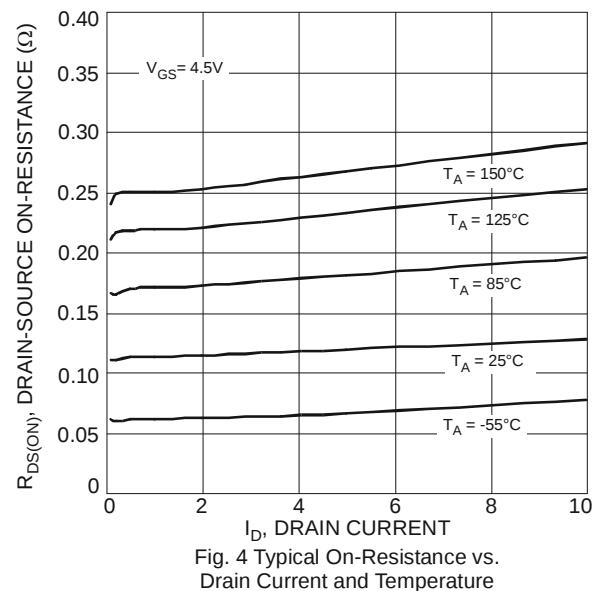
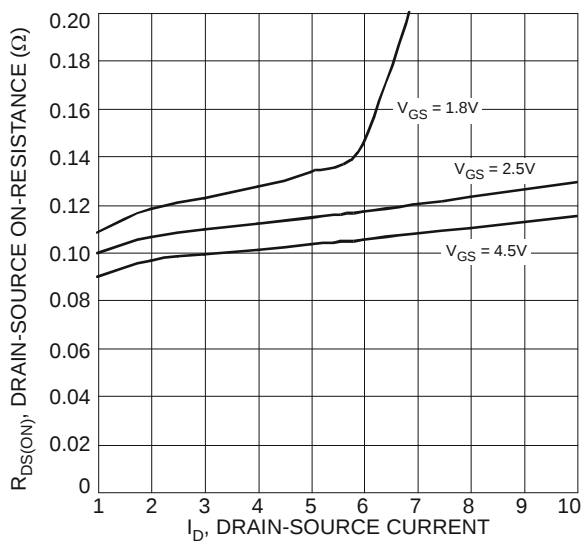
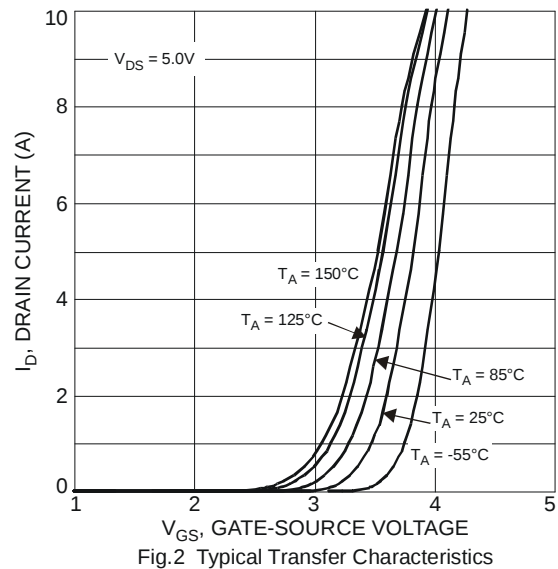
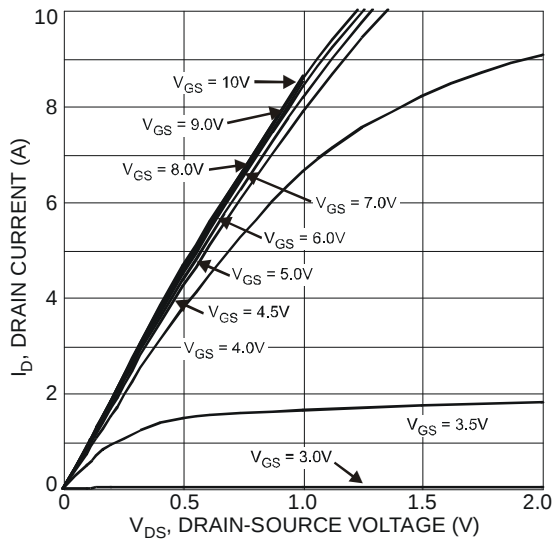
Notes:1. Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper plate.

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



N-CHANNEL HIGH VOLTAGE MOSFET

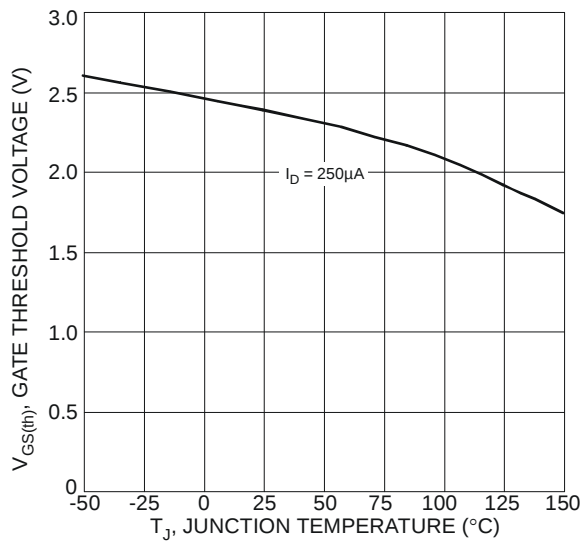


Fig. 7 Gate Threshold Variation vs. Ambient Temperature

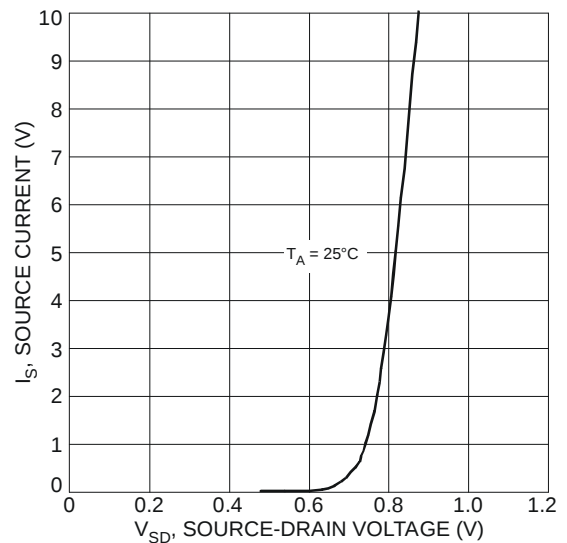


Fig.8 Diode Forward Voltage vs. Current

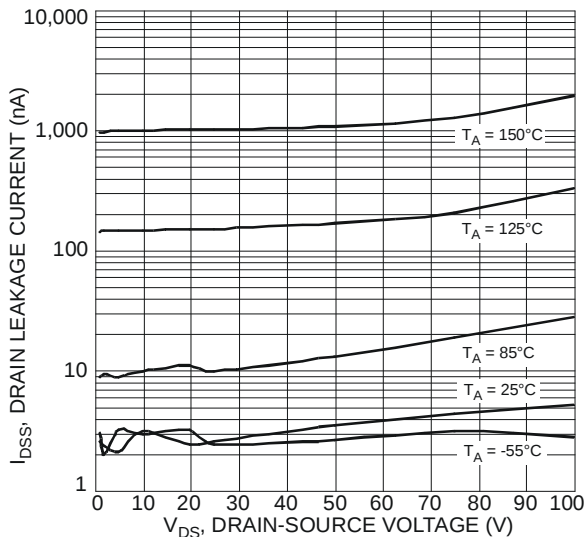


Fig. 9 Typical Drain-Source Leakage Current vs. Voltage

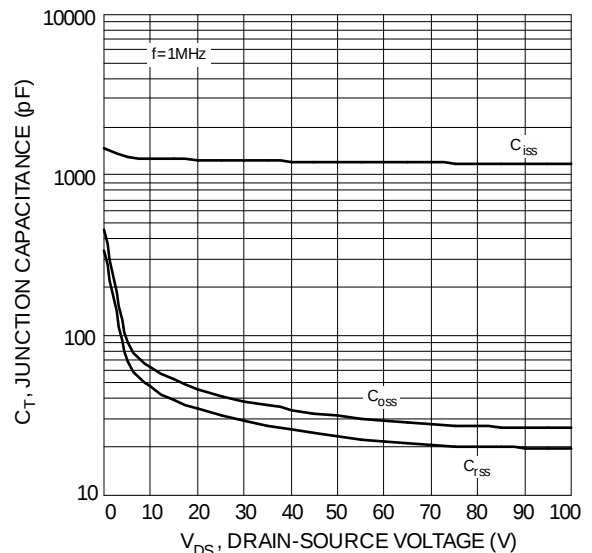


Figure 10 Typical Junction Capacitance

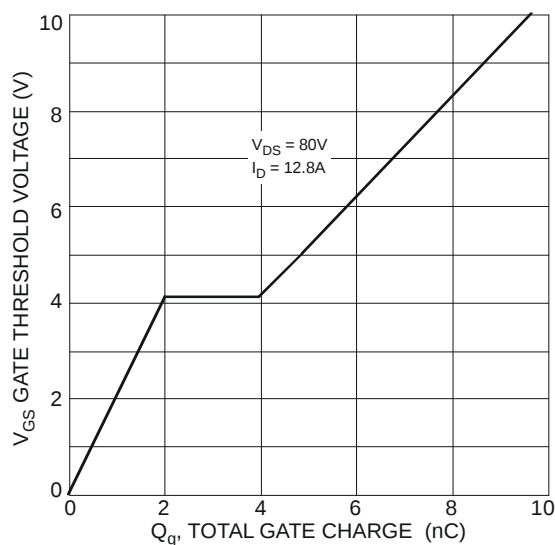


Fig. 11 Gate Charge

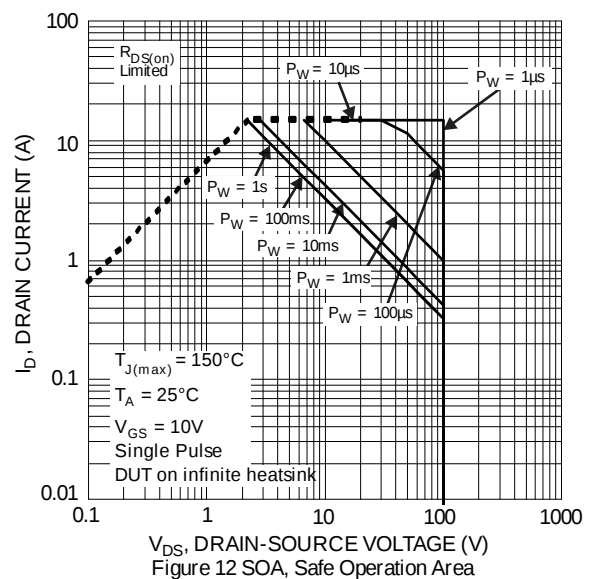


Figure 12 SOA, Safe Operation Area

N-CHANNEL HIGH VOLTAGE MOSFET

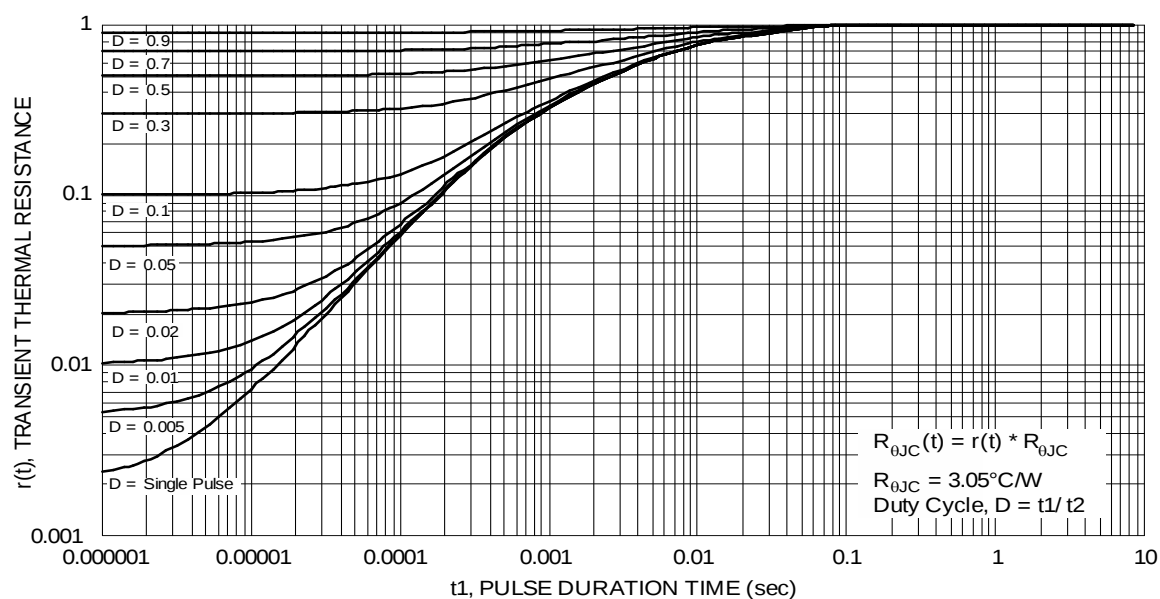
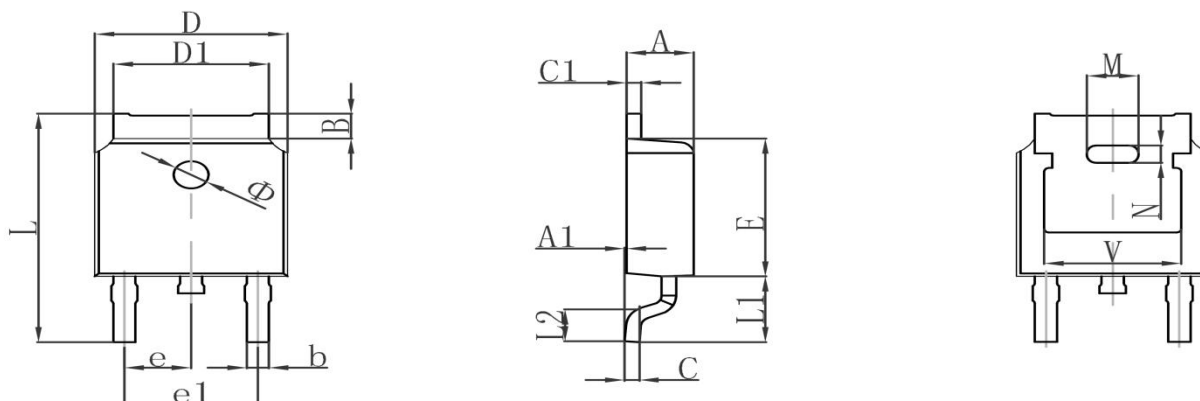


Figure 13 Transient Thermal Resistance

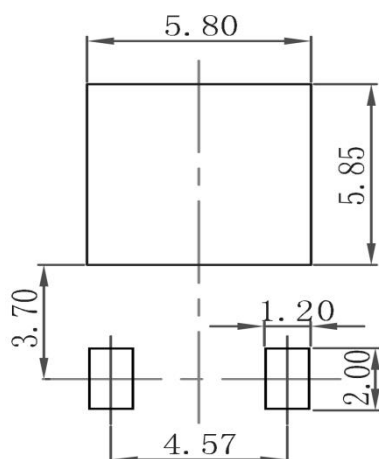
N-CHANNEL HIGH VOLTAGE MOSFET

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



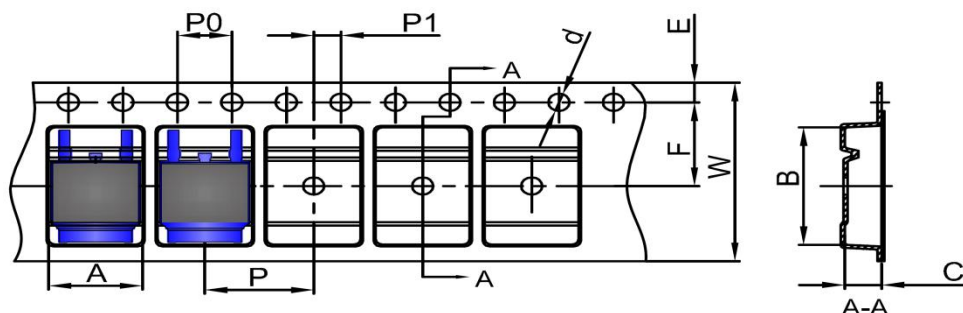
Note:

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

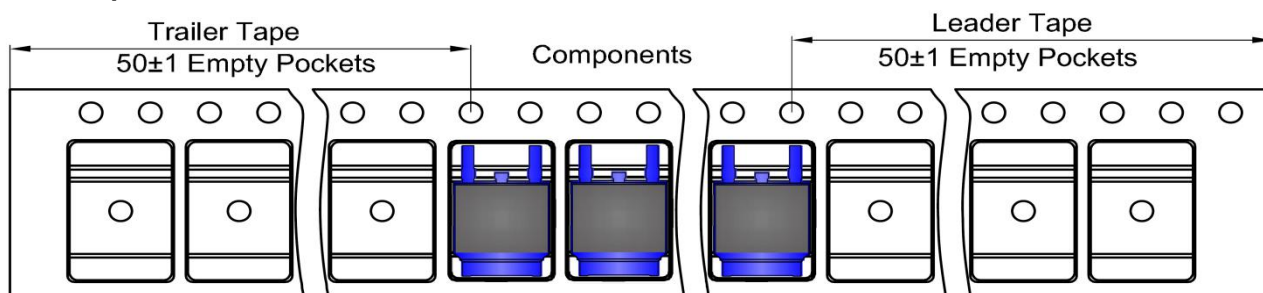
TO-252 Tape and Reel

TO-252 Embossed Carrier Tape

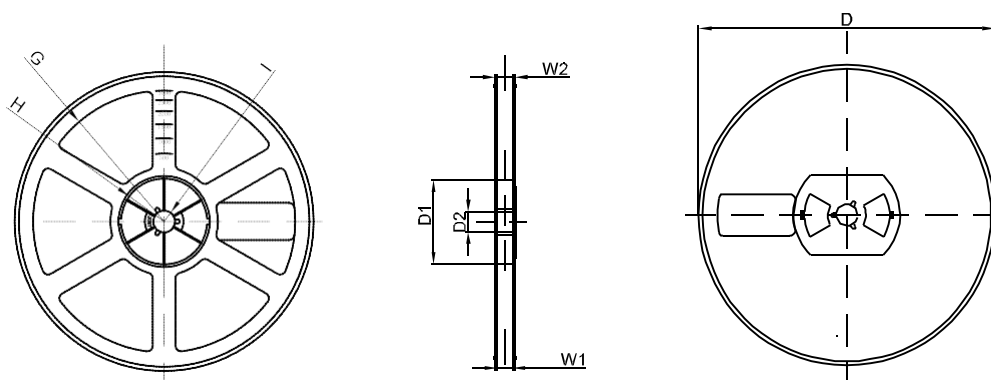


DIMENSIONS ARE IN MILLIMETER										
TYPE	A	B	C	d	E	F	P0	P	P1	W
TO-252	6.90	10.50	2.70	Ø1.55	1.75	7.50	4.00	8.00	2.00	16.00
TOLERANCE	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1

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