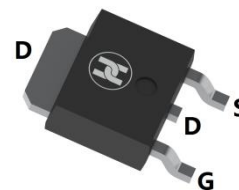
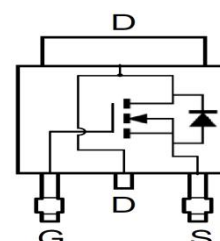


N-CHANNEL HIGH VOLTAGE MOSFET

FEATURES

- $V_{DS}=150V, R_{DS(ON)} \leq 310m\Omega @ V_{GS}=10V, I_D=8.3A$
- 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}	150	V
Gate-source voltage		V _{GS}	±20	V
Continuous drain current, V _{GS} =10V(1)	T _C = +25°C	I _D	8.3	A
	T _C = +100°C		5.2	A
Pulsed drain current (380μs Pulse, Duty Cycle = 1%)		I _{DM}	10	A
Maximum Body Diode Continuous Current (1)		I _S	2.6	A
Avalanche Current, L = 3mH		I _{AS}	0.5	A
Avalanche Energy, L = 3mH		E _{AS}	0.36	mJ
Power dissipation	T _C = +25°C	P _D	32	W
	T _C = +70°C		12	
Thermal resistance from Junction to ambient (1)		R _{θJA}	49	°C/W
Thermal Resistance, Junction to Case		R _{θJC}	3.9	°C/W
Operating and Storage temperature		T _J , T _{STG}	-55 ~+150	°C

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

Parameter	Symbol	Min	Typ	Max	Unit	Conditions
Drain-Source breakdown voltage(2)	$V_{(BR)DSS}$	150			V	$V_{GS}=0V, I_D=250\mu A$
Zero gate voltage drain current(2)	I_{DSS}			1	μA	$V_{DS}=120V, V_{GS}=0V$
Gate-body leakage current(2)	I_{GSS}			± 100	nA	$V_{DS}=0V, V_{GS}=\pm 20V$
Gate-threshold voltage (2)	$V_{GS(th)}$	1	2.6	3	V	$V_{DS}=V_{GS}, I_D=250\mu A$
Drain-source on-resistance (2)	$R_{DS(ON)}$		180	310	$m\Omega$	$V_{GS}=10V, I_D=1.5A$
			195	330	$m\Omega$	$V_{GS}=5V, I_D=1.0A$
			242	350	$m\Omega$	$V_{GS}=4V, I_D=1.0A$
Diode forward voltage (2)	V_{SD}		0.8	1.2	V	$I_S=1.7A, V_{GS}=0V$
Input capacitance (3)	C_{iss}		405		pF	$V_{DS}=25V, V_{GS}=0V, f=1MHz$
Output capacitance(3)	C_{oss}		40		pF	
Reverse transfer capacitance(3)	C_{rss}		20		pF	
Gate Resistance(3)	R_g		2.88		Ω	$V_{DS}=0V, V_{GS}=0V, f=1MHz$
Turn-on delay time(3)	$t_{d(on)}$		3.5		nS	$V_{DD}=50V, V_{DS}=10V$ $I_D=7.3A, R_G=25\Omega$
Turn-on rise time(3)	t_r		7.8		nS	
Turn-off delay time(3)	$t_{d(off)}$		22		nS	
Turn-off fall time(3)	t_f		11		nS	$V_{DS}=80V, V_{GS}=5.0V, I_D=7.3A$
Total Gate Charge(3)	Q_g		4.6		nC	
Total gate charge(3)	Q_g		8.7		nC	
Gate-source charge(3)	Q_{gs}		1.7		nC	$V_{DD}=80V, V_{GS}=10V, I_D=7.3A$
Gate-drain charge(3)	Q_{gd}		1.8		nC	
Body Diode Reverse Recovery Time(3)	t_{rr}		38		nS	
Body Diode Reverse Recovery Charge(3)	Q_{rr}		53		nC	$I_S=7.3A, di/dt= 100A/\mu s$

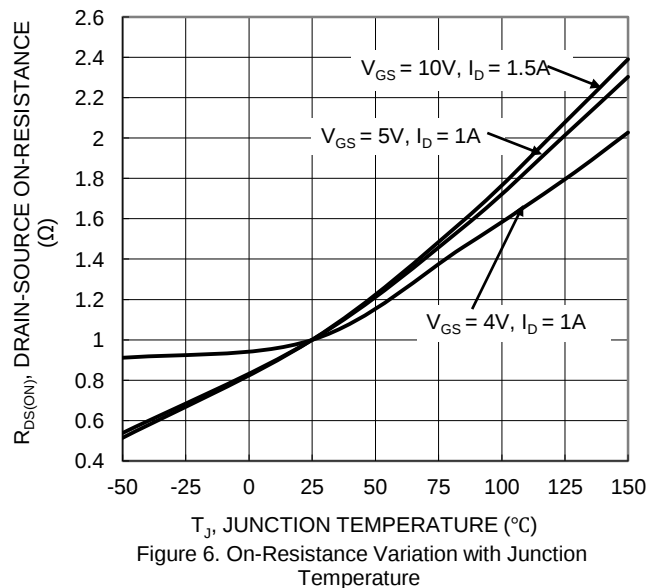
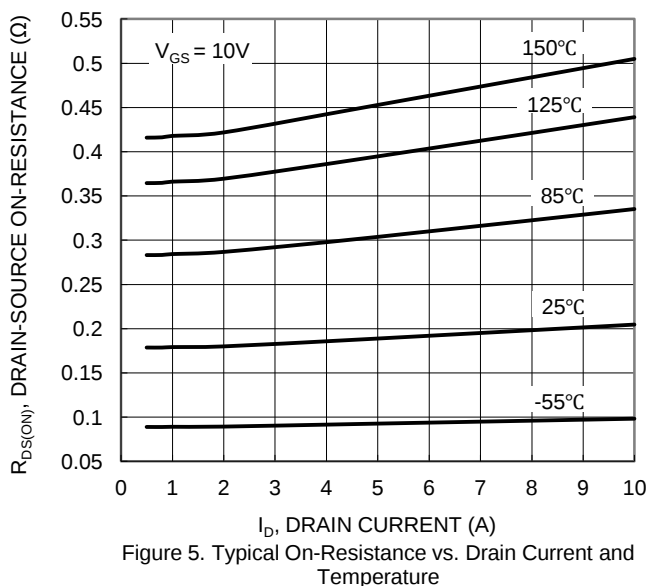
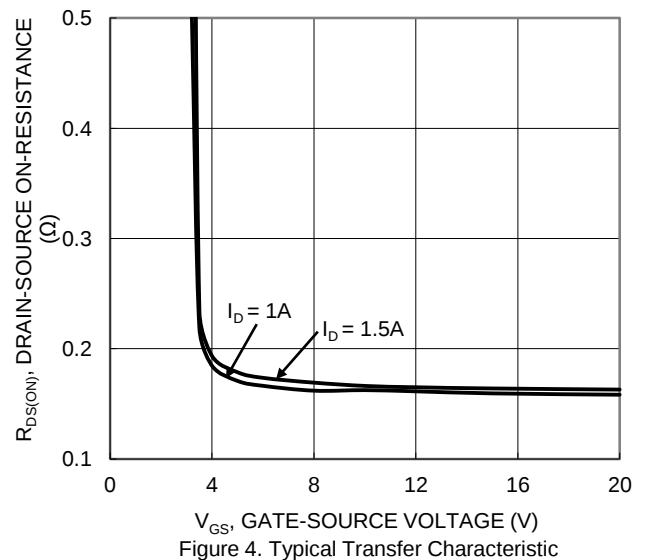
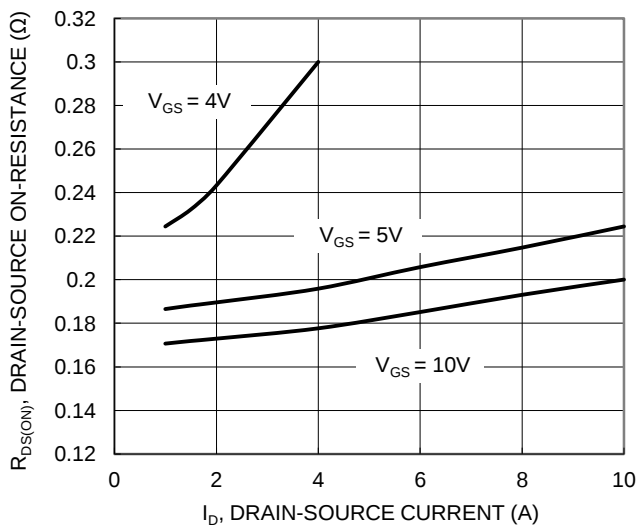
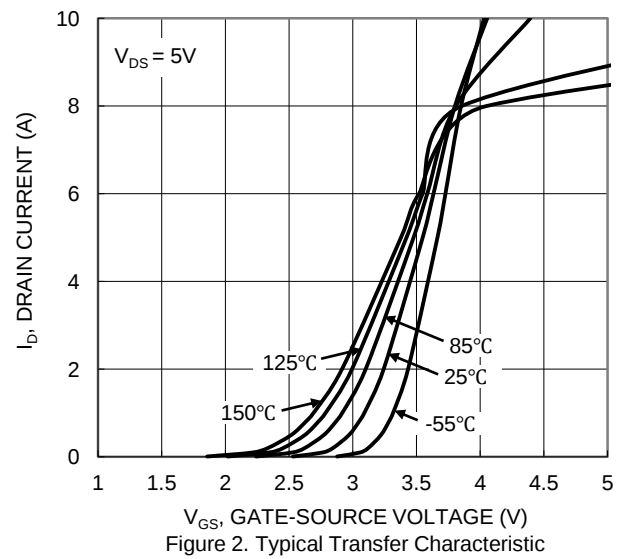
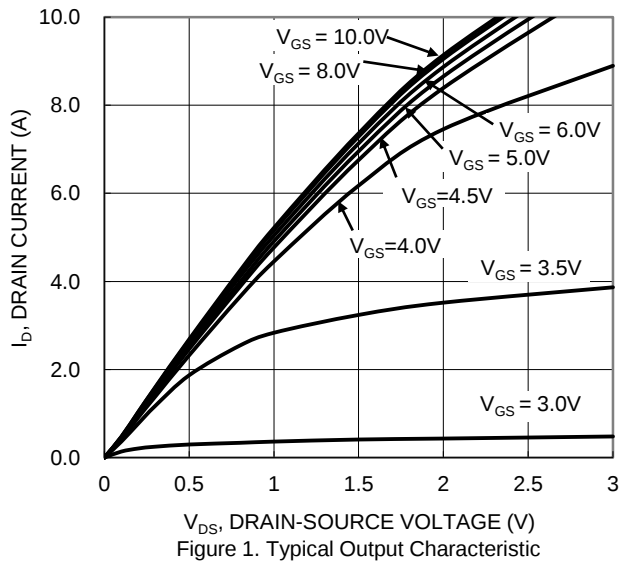
Notes:1. Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper plate.

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



N-CHANNEL HIGH VOLTAGE MOSFET

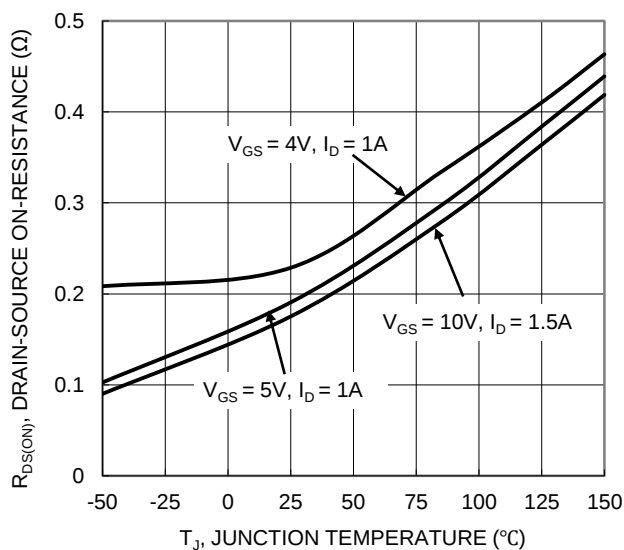


Figure 7. On-Resistance Variation with Junction Temperature

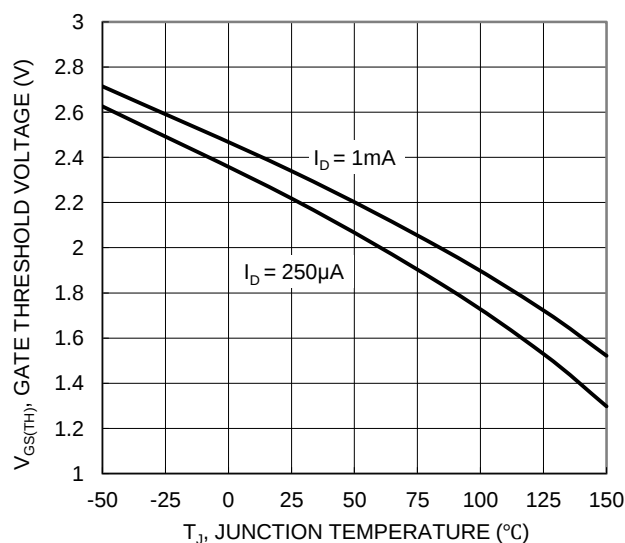


Figure 8. Gate Threshold Variation vs. Junction Temperature

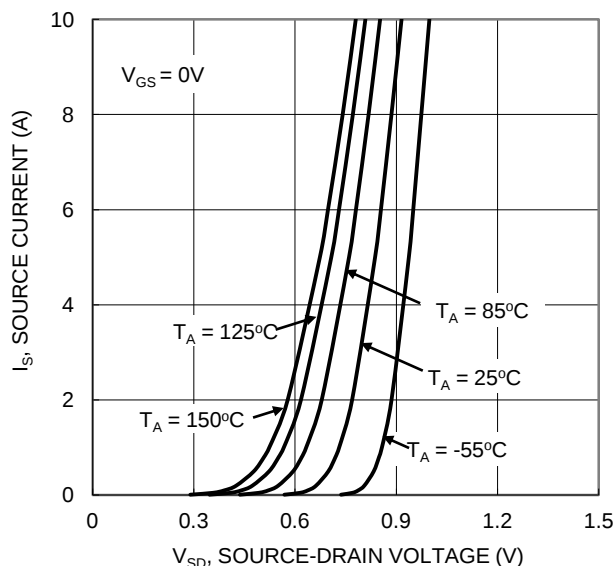


Figure 9. Diode Forward Voltage vs. Current

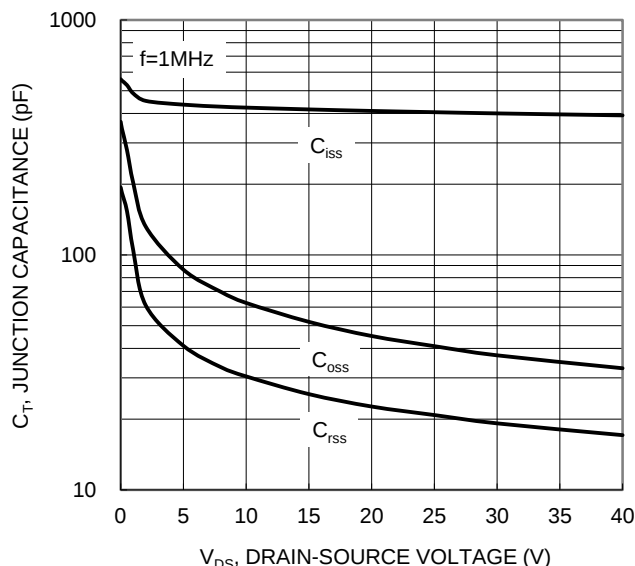


Figure 10. Typical Junction Capacitance

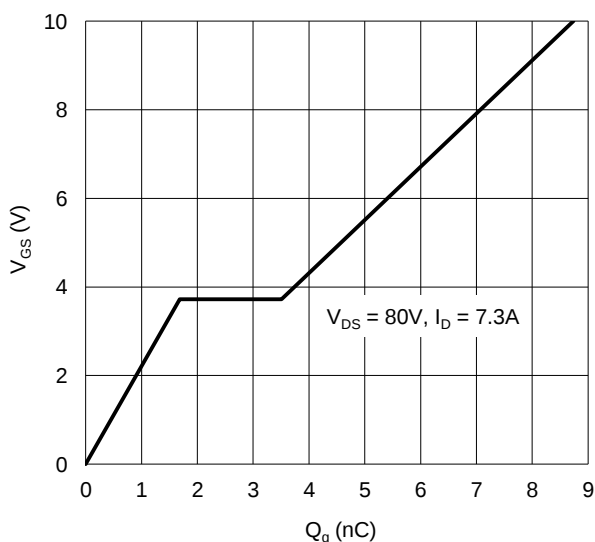


Figure 11. Gate Charge

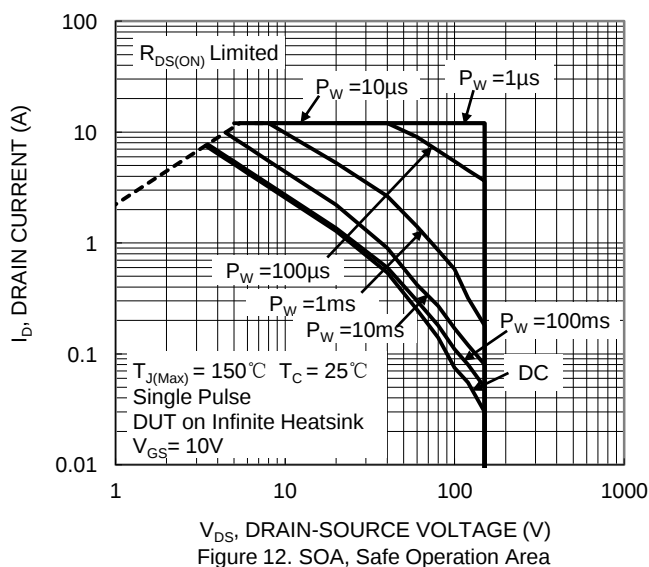


Figure 12. SOA, Safe Operation Area

N-CHANNEL HIGH VOLTAGE MOSFET

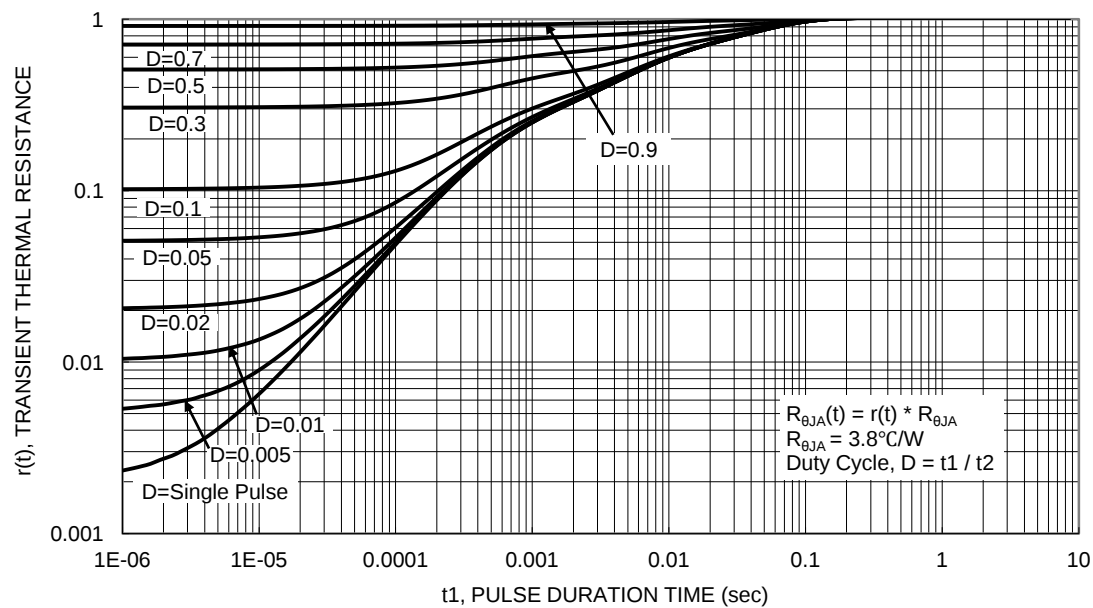
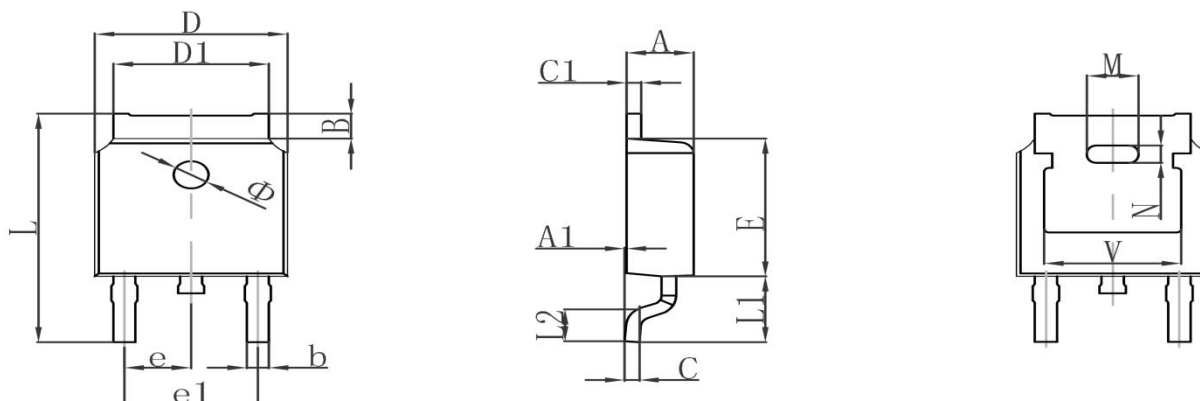


Figure 13. Transient Thermal Resistance

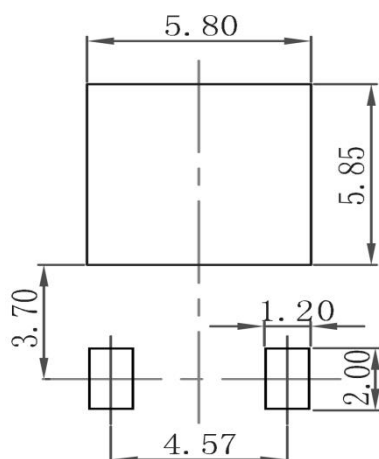
N-CHANNEL HIGH VOLTAGE MOSFET

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



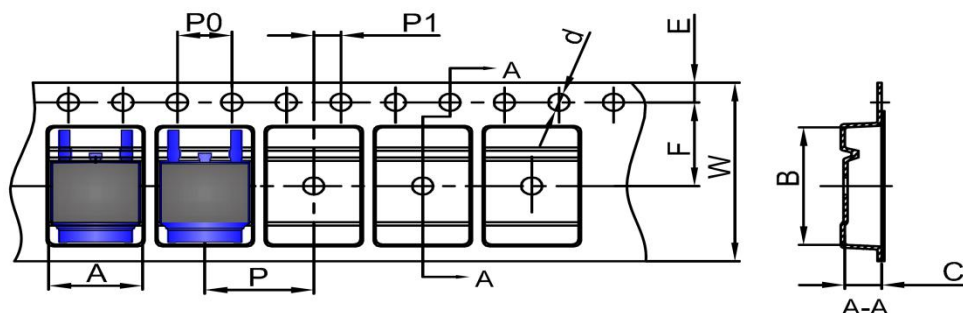
Note:

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

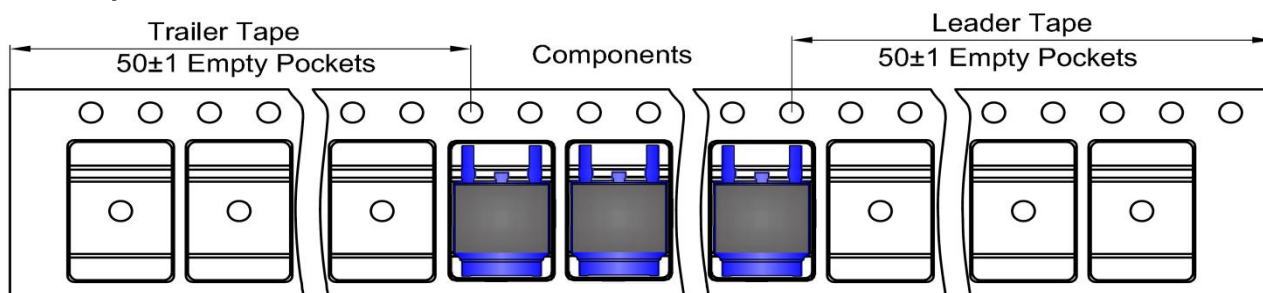
TO-252 Tape and Reel

TO-252 Embossed Carrier Tape

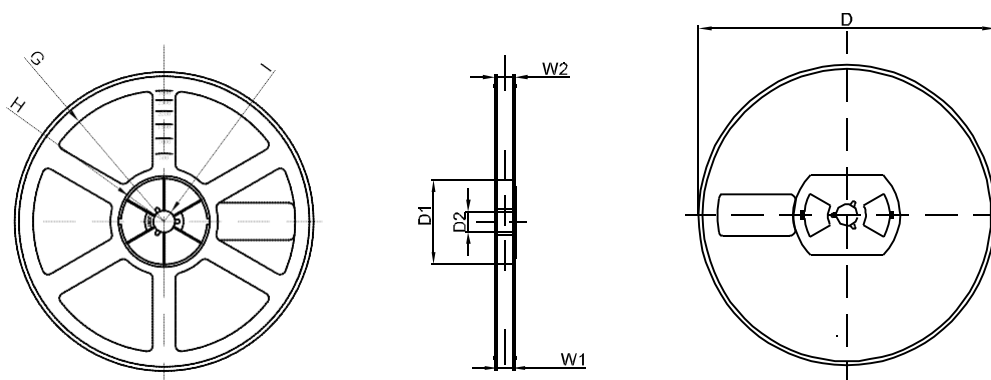


DIMENSIONS ARE IN MILLIMETER										
TYPE	A	B	C	d	E	F	P0	P	P1	W
TO-252	6.90	10.50	2.70	Ø1.55	1.75	7.50	4.00	8.00	2.00	16.00
TOLERANCE	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1

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