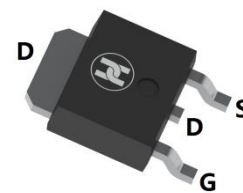
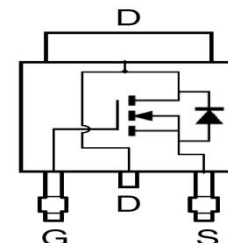


N-CHANNEL HIGH VOLTAGE MOSFET

FEATURES

- $V_{DS}=100V, R_{DS(ON)} \leq 28m\Omega @ V_{GS}=10V, I_D=55A$
- Low $R_{DS(ON)}$ – Minimises Power Losses
- Low Q_g – Minimises Switching Losses
- 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, $V_{GS} = 10V$	I_D	55	A
		39	A
Pulsed drain current (10 μ s Pulse, Duty Cycle = 1%)	I_{DM}	58	A
Maximum Continuous Body Diode Forward Current (1)	I_S	2.2	A
Avalanche Current, $L = 0.1mH$	I_{AS}	29	A
Avalanche Energy, $L = 0.1mH$	E_{AS}	43	mJ
Power dissipation(1)	P_D	2.0	W
Power dissipation(2)		3.7	
Thermal resistance from Junction to ambient (1)	$R_{\theta JA}$	74	$^\circ C/W$
Thermal resistance from Junction to ambient (2)		40	
Thermal Resistance, Junction to Case (1)	$R_{\theta JC}$	1.2	$^\circ C/W$
Operating and Storage temperature	T_J, T_{STG}	-55 ~ +175	$^\circ C$

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

Parameter	Symbol	Min	Typ	Max	Unit	Conditions
Drain-Source breakdown voltage(3)	$V_{(BR)DSS}$	100			V	$V_{GS}=0V, I_D=250\mu A$
Zero gate voltage drain current(3)	I_{DSS}			1	μA	$V_{DS}=100V, V_{GS}=0V$
Gate-body leakage current(3)	I_{GSS}			± 100	nA	$V_{DS}=0V, V_{GS}=\pm 20V$
Gate-threshold voltage (3)	$V_{GS(th)}$	2.0	2.5	3.3	V	$V_{DS}=V_{GS}, I_D=250\mu A$
Drain-source on-resistance (3)	$R_{DS(ON)}$		20	28	m Ω	$V_{GS}=10V, I_D=20A$
Diode forward voltage (3)	V_{SD}		0.7	1.2	V	$I_S=1.0A, V_{GS}=0V$
Input capacitance (4)	C_{iss}		2245		pF	$V_{DS}=50V, V_{GS}=0V, f=1MHz$
Output capacitance(4)	C_{oss}		173		pF	
Reverse transfer capacitance(4)	C_{rss}		68		pF	
Gate Resistance(4)	R_g		1.9		Ω	$V_{DS}=0V, V_{GS}=0V, f=1MHz$
Turn-on delay time(4)	$t_{d(on)}$		6.4		nS	$V_{DS}=50V, V_{GS}=10V$ $I_D=20A, R_g=3.0\Omega$
Turn-on rise time(4)	t_r		5.8		nS	
Turn-off delay time(4)	$t_{d(off)}$		17.8		nS	
Turn-off fall time(4)	t_f		4.8		nS	$V_{DS}=50V, V_{GS}=6V, I_D=20A$
Total Gate Charge(4)	Q_g		22		nC	
Total gate charge(4)	Q_g		36		nC	
Gate-source charge(4)	Q_{gs}		7.3		nC	$V_{DS}=50V, V_{GS}=10V, I_D=20A$
Gate-drain charge(4)	Q_{gd}		9.2		nC	
Body Diode Reverse Recovery Time(4)	t_{rr}		35		nS	
Body Diode Reverse Recovery Charge(4)	Q_{rr}		47		nC	$I_S=20A, di/dt=100A/\mu s$

Notes: 1. Device mounted on FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout.
2. Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper plate.
3. Short duration pulse test used to minimize self-heating effect.
4. Guaranteed by design. Not subject to product testing.

N-CHANNEL HIGH VOLTAGE MOSFET

Typical Characteristics

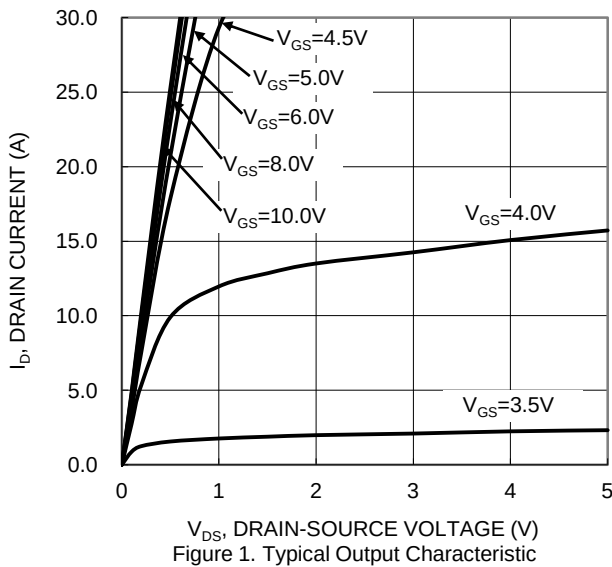


Figure 1. Typical Output Characteristic

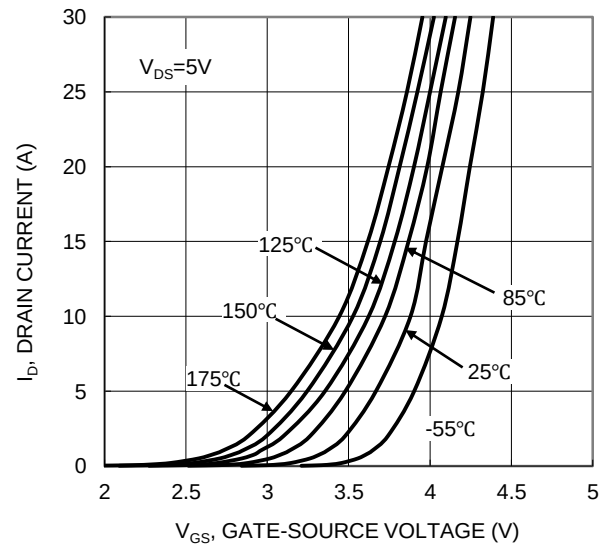


Figure 2. Typical Transfer Characteristic

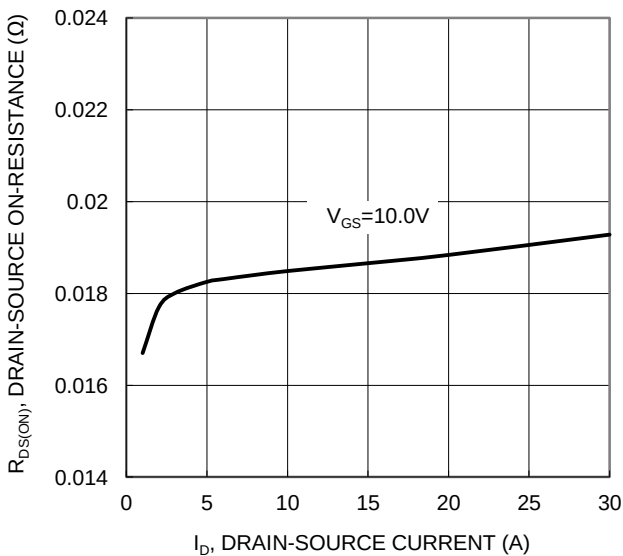


Figure 3. Typical On-Resistance vs. Drain Current and Gate Voltage

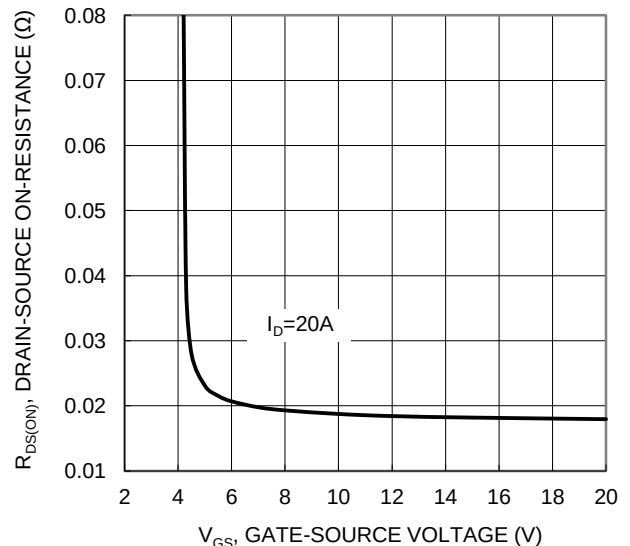


Figure 4. Typical Transfer Characteristic

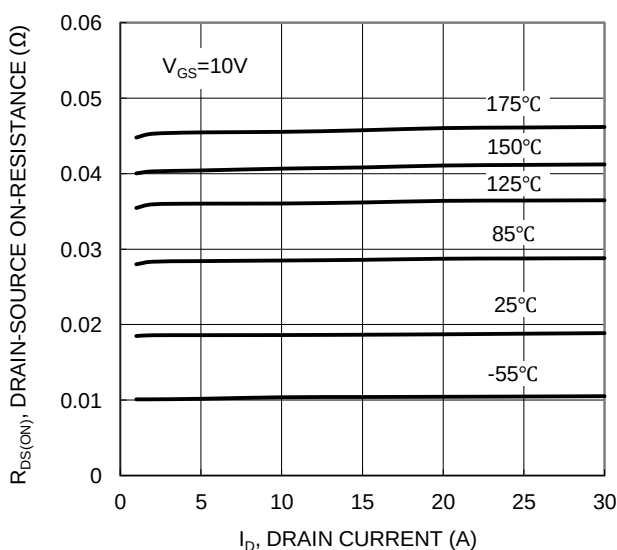


Figure 5. Typical On-Resistance vs. Drain Current and Temperature

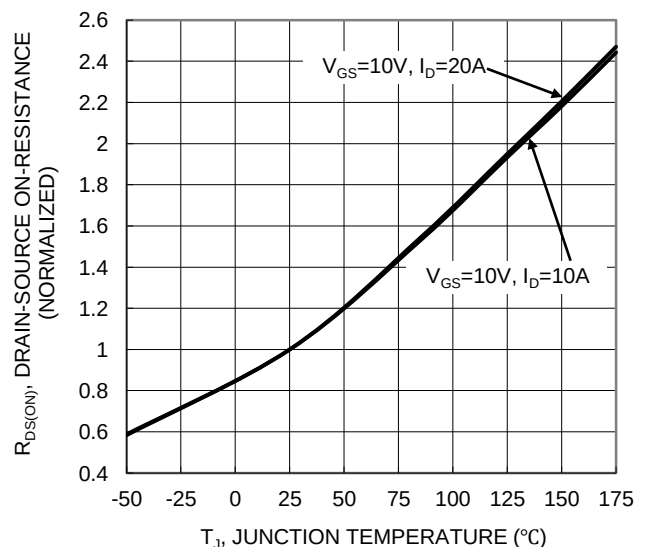
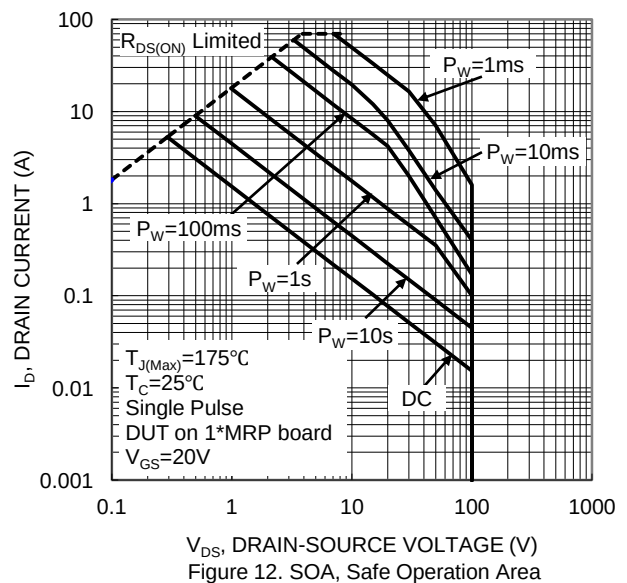
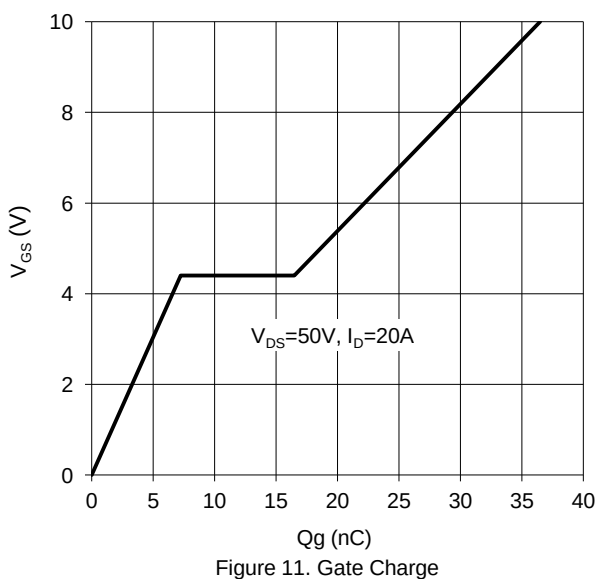
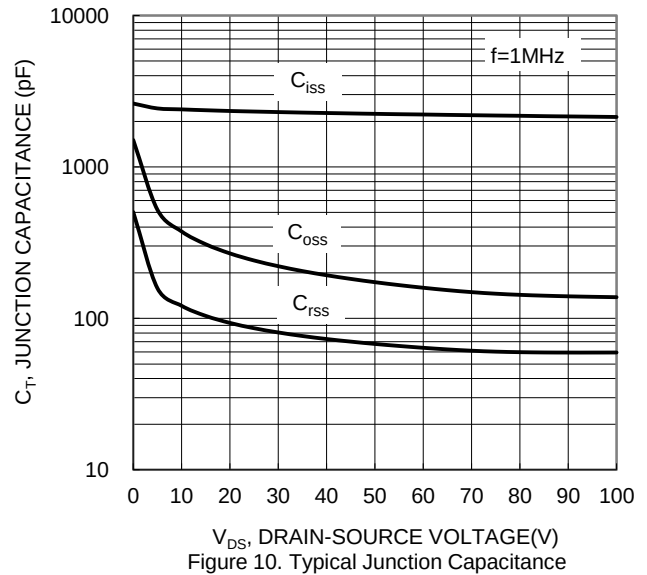
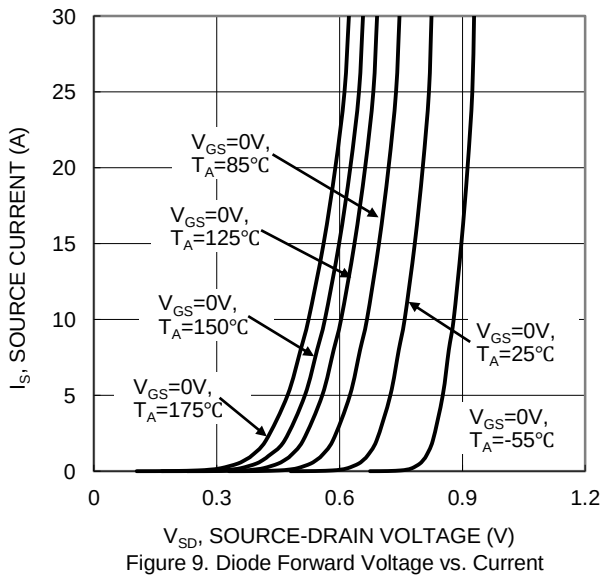
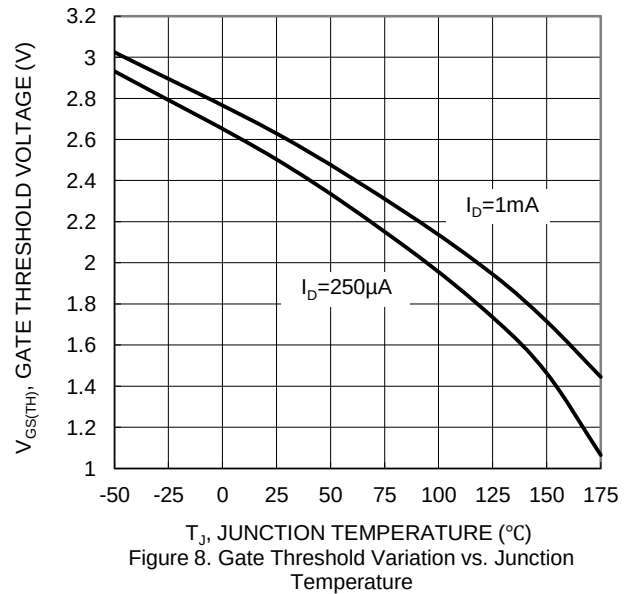
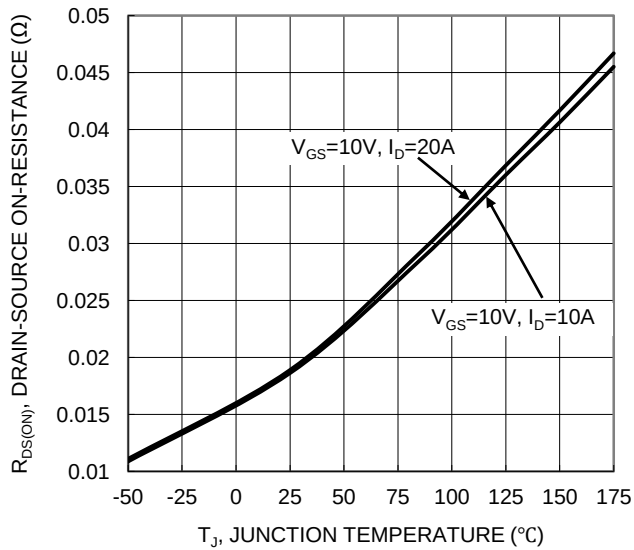


Figure 6. On-Resistance Variation with Temperature

N-CHANNEL HIGH VOLTAGE MOSFET



N-CHANNEL HIGH VOLTAGE MOSFET

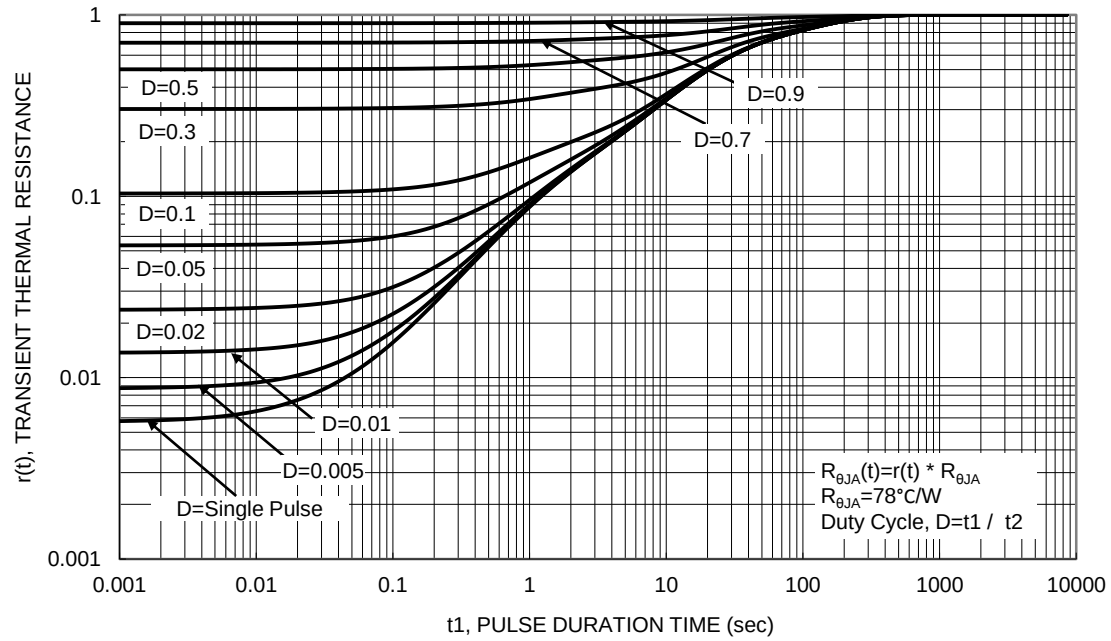
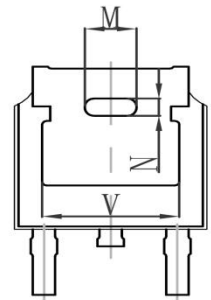
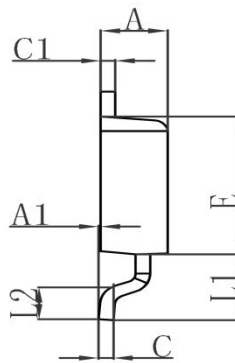
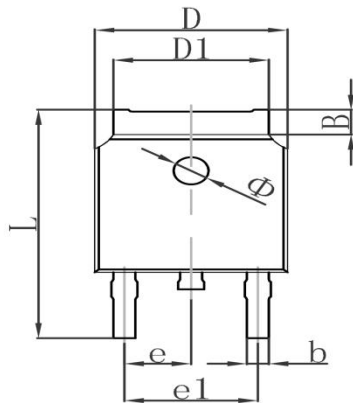


Figure 13. Transient Thermal Resistance

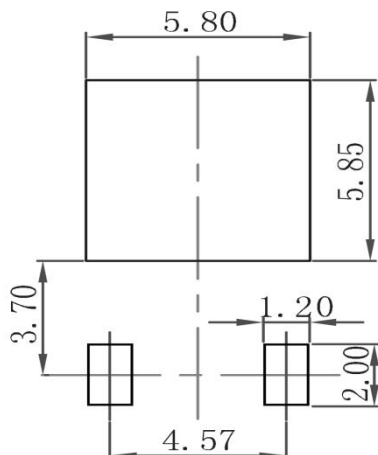
N-CHANNEL HIGH VOLTAGE MOSFET

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



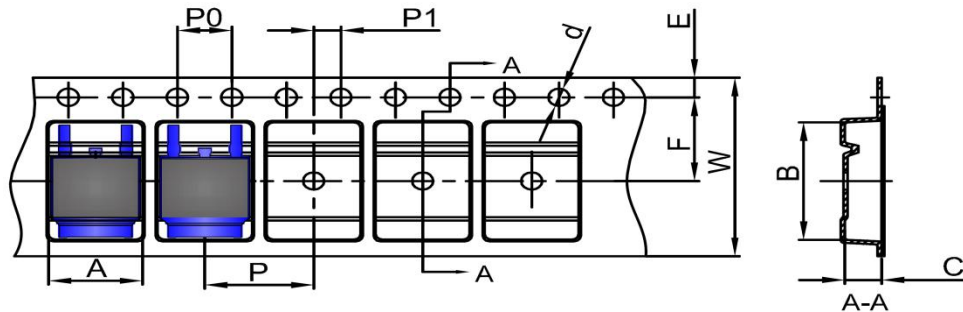
Note:

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

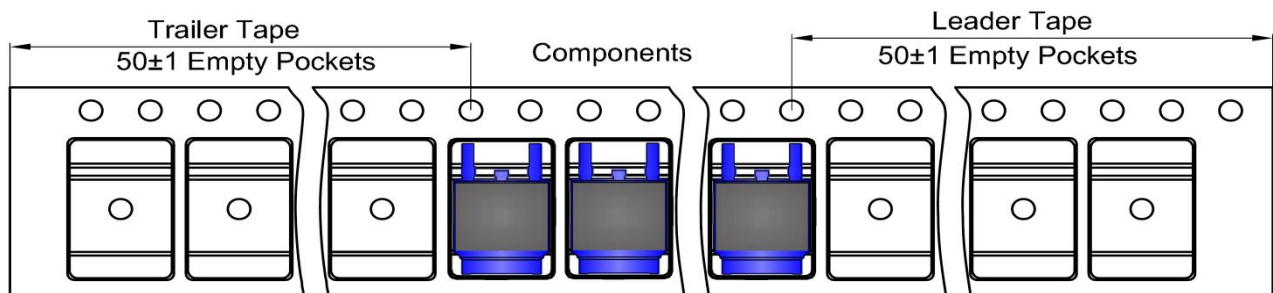
TO-252 Tape and Reel

TO-252 Embossed Carrier Tape

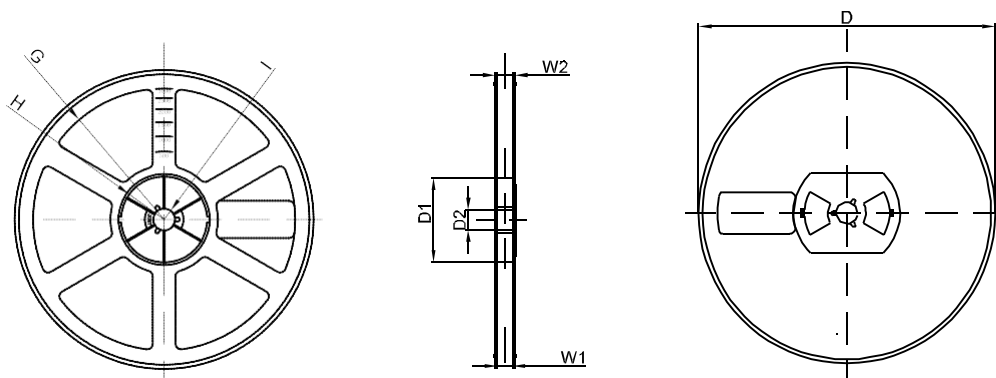


DIMENSIONS ARE IN MILLIMETER										
TYPE	A	B	C	d	E	F	P0	P	P1	W
TO-252	6.90	10.50	2.70	Ø1.55	1.75	7.50	4.00	8.00	2.00	16.00
TOLERANCE	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1

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