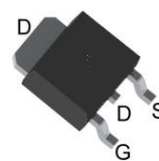
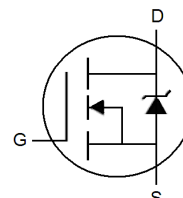


N-CHANNEL Power MOSFET

FEATURES

- V_{DS} :650V, I_D : 4A Max.
- $R_{DS(ON)}$:2.6 Ω (max.)@ $V_{GS}=10V, I_D=1A$
- High density cell design for ultra low on-resistance
- Fully characterized avalanche voltage and current


TO-252

EQUIVALENT CIRCUIT

MECHANICAL DATA

- Case: TO-252
- Case material: Molded Plastic. UL flammability 94V-0
- Weight:0.33grams(approximate)
- Marking:D4N65

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

Parameter	Symbol	Value	Unit
Drain-source voltage	V_{DS}	650	V
Gate-source voltage	V_{GS}	± 30	V
Continuous drain current, $V_{GS}=10V$	I_D	4	A
Pulsed drain current (Note 1)	I_{DM}	16	A
Power dissipation	P_D	23.1	W
Thermal resistance from junction to ambient	$R_{\theta JA}$	100	$^{\circ}\text{C/W}$
Operating junction and storage temperature	T_J, T_{STG}	-55~+150	$^{\circ}\text{C}$
Single Pulsed Avalanche Energy (note 1)	E_{AS}	250	mJ
Lead Temperature for Soldering Purposes (1/8" from case for 10s)	T_L	260	$^{\circ}\text{C}$

Note: 1. E_{AS} condition: $V_{DD}=20V, L=0.5mH, R_G=25\Omega$, Starting $T_J = 25^{\circ}\text{C}$

N-CHANNEL Power MOSFET
ELECTRICAL CHARACTERISTICS (TA=25°C unless otherwise noted)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	$V_{GS} = 0V, I_D = 250\mu A$	650	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS} = 650V, V_{GS} = 0V, T_J = 25^\circ C$	--	--	100	nA
I_{GSS}	Gate-Source Leakage	$V_{GS} = \pm 30V$	--	--	± 100	nA
$V_{GS(th)}$	Gate-Source Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250\mu A$	2.0	--	4.0	V
$R_{DS(on)}$	Drain-Source On-Resistance (Note3)	$V_{GS} = 10V, I_D = 1A$	--	2.22	2.6	Ω
C_{iss}	Input Capacitance	$V_{GS} = 0V,$ $V_{DS} = 25V, f = 1.0MHz$	--	450	--	pF
C_{oss}	Output Capacitance		--	50	--	
C_{rss}	Reverse Transfer Capacitance		--	6	--	
Q_g	Total Gate Charge	$V_{DD} = 325V, I_D = 4A,$ $V_{GS} = 10V$	--	8.5	--	nC
Q_{gs}	Gate-Source Charge		--	2.8	--	
Q_{gd}	Gate-Drain Charge		--	2.5	--	
$t_{d(on)}$	Turn-on Delay Time	$V_{DD} = 325V, I_D = 4A,$ $R_G = 4.7\Omega$	--	10	--	ns
t_r	Turn-on Rise Time		--	7	--	
$t_{d(off)}$	Turn-off Delay Time		--	22	--	
t_f	Turn-off Fall Time		--	9	--	
I_S	Continuous Body Diode Current	$T_C = 25^\circ C$	--	--	4	A
I_{SM}	Pulsed Diode Forward Current		--	--	16	
V_{SD}	Body Diode Voltage	$T_J = 25^\circ C, I_{SD} = 1.0A, V_{GS} = 0V$	--	--	0.9	V
t_{rr}	Reverse Recovery Time	$V_{GS} = 0V, I_S = 4.0A,$ $di_F/dt = 100A/\mu s$	--	235	--	ns
Q_{rr}	Reverse Recovery Charge		--	750	--	nC

N-CHANNEL Power MOSFET

TYPICAL CHARACTERISTICS

Figure 1. Maximum Transient Thermal Impedance

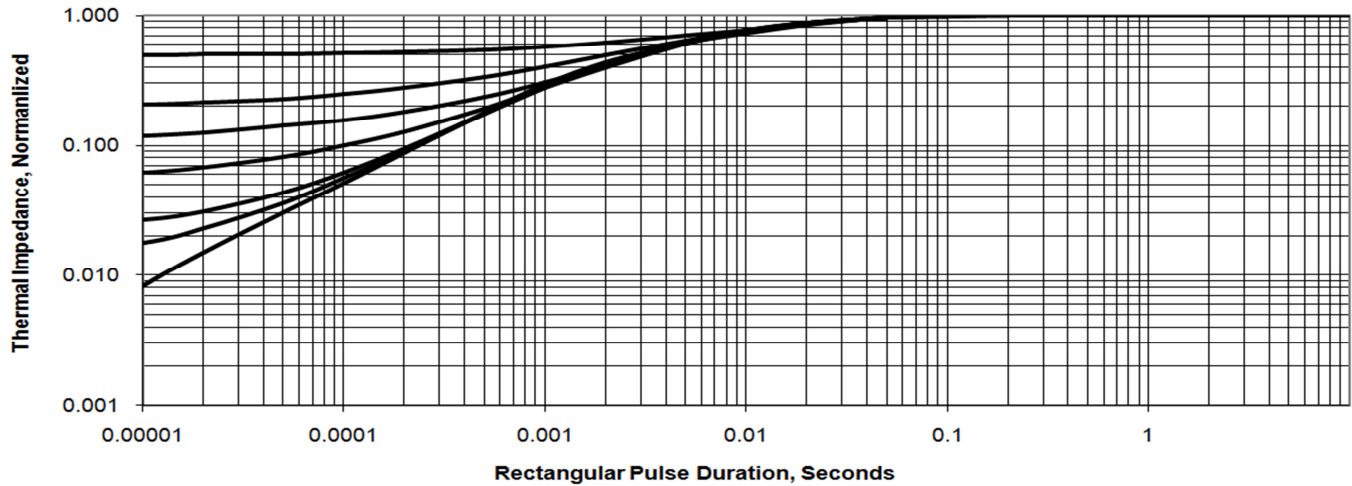


Figure 2. Maximum Power Dissipation vs Case Temperature

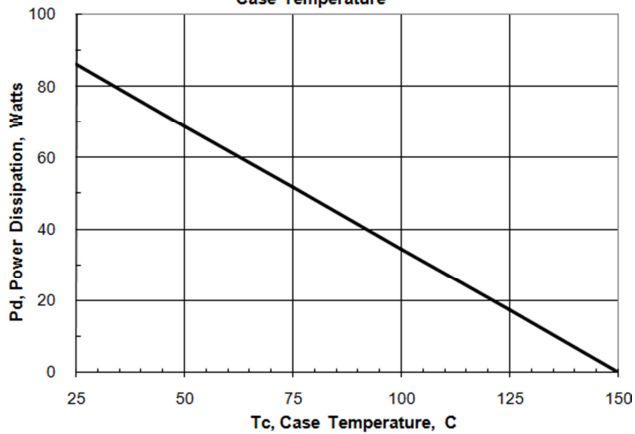


Figure 3. Maximum Continuous Drain Current vs Case Temperature

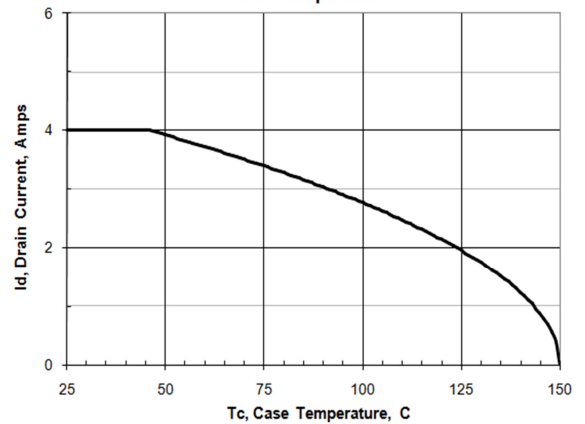


Figure 4. Typical Output Characteristics

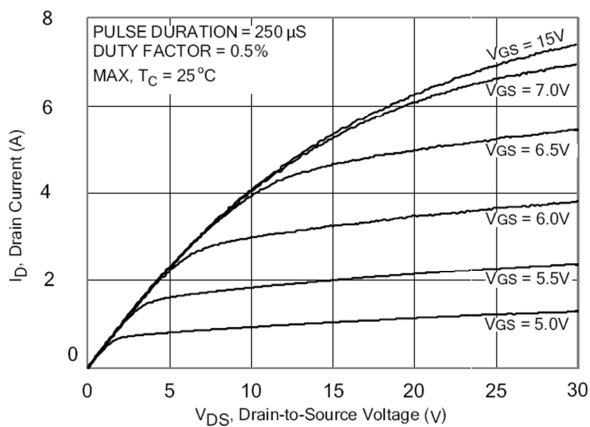
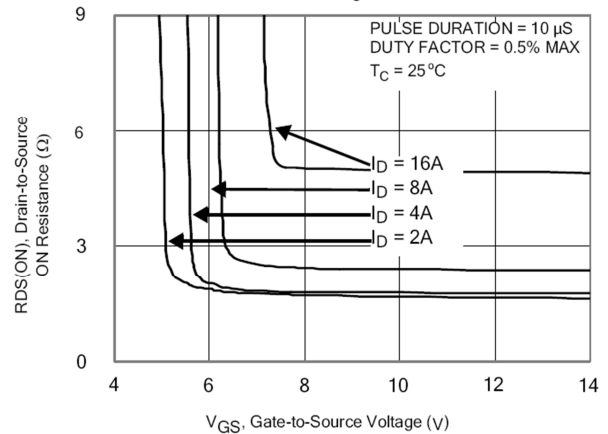
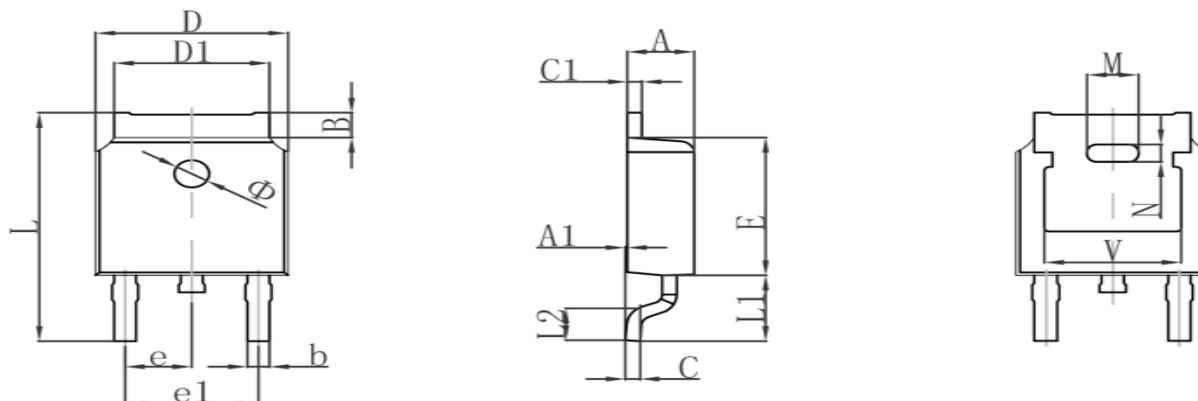
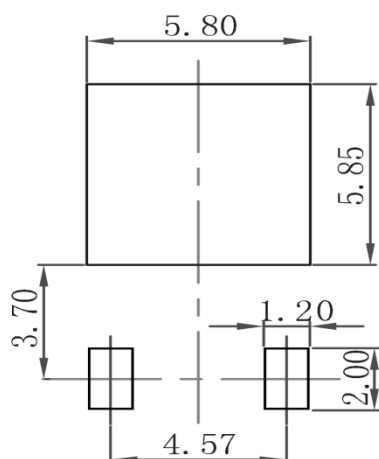


Figure 5. Typical Drain-to-Source ON Resistance vs Gate Voltage and Drain Current



N-CHANNEL Power 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

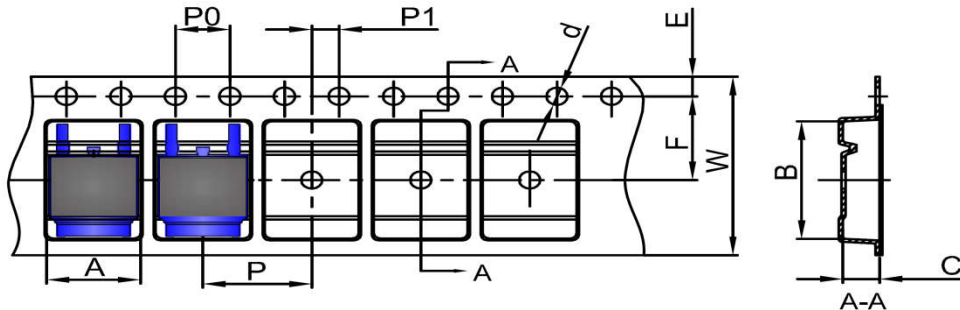
TO-252 SUGGESTED PAD LAYOUT

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 Power MOSFET

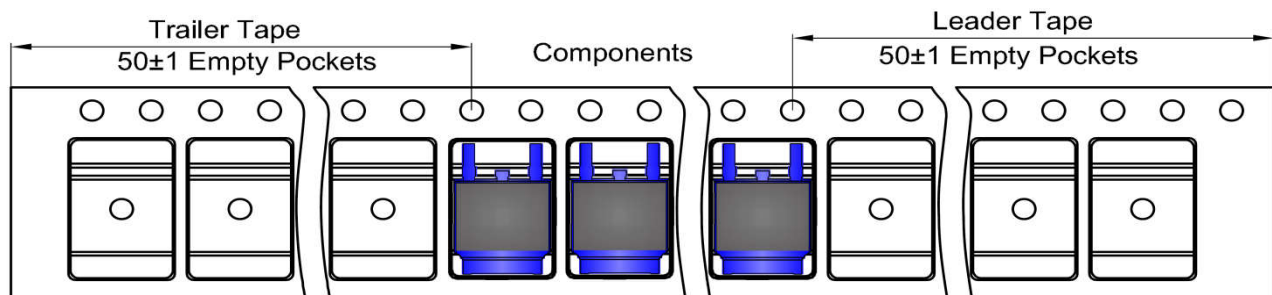
TO-252 TAPE AND REEL

TO-252 Embossed Carrier Tape

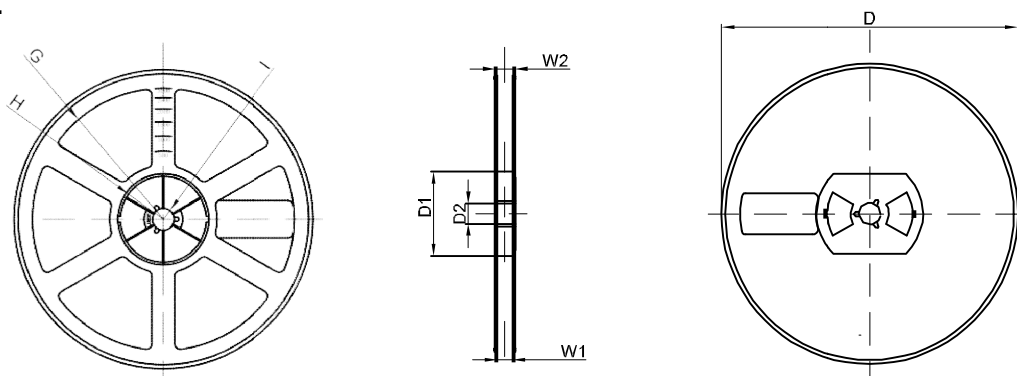


DIMENSIONS ARE IN MILLIMETER										
TYPE	A	B	C	d	E	F	P0	P	P1	W
TO-252	6.90	10.50	2.70	Ø1.55	1.75	7.50	4.00	8.00	2.00	16.00
TOLERANCE	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1

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