

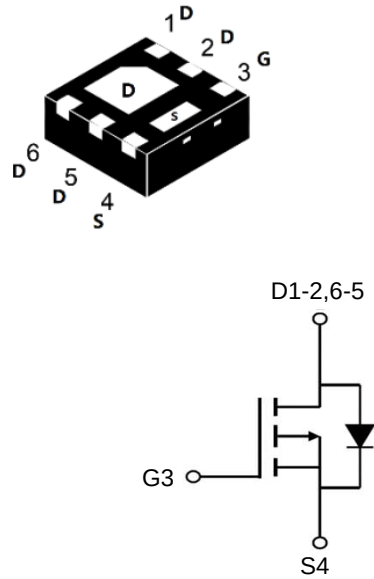
Description:

This P-Channel MOSFET uses advanced trench technology and design to provide excellent $R_{DS(on)}$ with low gate charge.

It can be used in a wide variety of applications.

Features:

- 1) $V_{DS}=-15V, I_D=-12A, R_{DS(ON)}<16m\Omega @V_{GS}=-4.5V$ (Typ: $14m\Omega$)
- 2) Low gate charge.
- 3) Green device available.
- 4) Advanced high cell density trench technology for ultra low $R_{DS(ON)}$.
- 5) Excellent package for good heat dissipation.
- 6) MSL3



Package Marking and Ordering Information:

Part NO.	Marking	Package	Packing
R2403	2403	DFN2*2-6	3000pcs/Reel

Absolute Maximum Ratings: ($T_C=25^\circ C$ unless otherwise noted)

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	-15	V
V_{GS}	Gate-Source Voltage	± 12	V
I_D	Continuous Drain Current ¹	-12	A
	Continuous Drain Current- $T_C=100^\circ C$ ¹	-8.4	
I_{DM}	Pulsed Drain Current ²	-48	
P_D	Power Dissipation	8	W
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55-+150	$^\circ C$

Thermal Characteristics:

Symbol	Parameter	Max	Units
$R_{\theta JC}$	Thermal Resistance, Junction to Case	15.6	$^\circ C/W$

Electrical Characteristics: ($T_C=25^{\circ}\text{C}$ unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250 μ A	-15	---	---	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{GS} =0V, V _{DS} =-15V	---	---	-1	μ A
I _{GSS}	Gate-Source Leakage Current	V _{GS} =± 12V, V _{DS} =0A	---	---	±100	nA
On Characteristics						
V _{GS(th)}	Gate-Source Threshold Voltage	V _{GS} =V _{DS} , I _D =250 μ A	-0.4	-0.7	-1	V
R _{DS(on)}	Drain-Source On Resistance ³	V _{GS} =-4.5V, I _D =-8A	---	14	16	m Ω
		V _{GS} =-2.5V, I _D =-5A	---	16	25	m Ω
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =-7V, V _{GS} =0V, f=1MHz	---	1300	---	pF
C _{oss}	Output Capacitance		---	675	--	
C _{rss}	Reverse Transfer Capacitance		---	585	---	
Switching Characteristics						
t _{d(on)}	Turn-On Delay Time	V _{DS} =-7V, I _D =-8A, R _G =2.5 Ω ,V _{GS} =-4.5V	---	11	---	ns
t _r	Rise Time		---	35	---	ns
t _{d(off)}	Turn-Off Delay Time		---	30	---	ns
t _f	Fall Time		---	10	---	ns
Q _g	Total Gate Charge	V _{GS} =-4.5V, V _{DS} =-7V, I _D =-8A	---	14	---	nC
Q _{gs}	Gate-Source Charge		---	5	---	nC
Q _{gd}	Gate-Drain “Miller” Charge		---	10	---	nC
Drain-Source Diode Characteristics						
V _{SD}	Diode Forward Voltage	V _{GS} =0V, I _{SD} =-16A	---	---	-1.2	V
I _S	Continuous Drain Curren	V _D =V _G =0V	---	---	-12	A
I _{SM}	Pulsed Drain Current		---	---	-448	A

Notes:

1. Computed continuous current assumes the condition of $T_{j,Max}$ while the actual continuous current depends on the thermal & electro-mechanical application board design
2. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
3. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 0.5\%$

Typical Characteristics: ($T_C=25^\circ C$ unless otherwise noted)

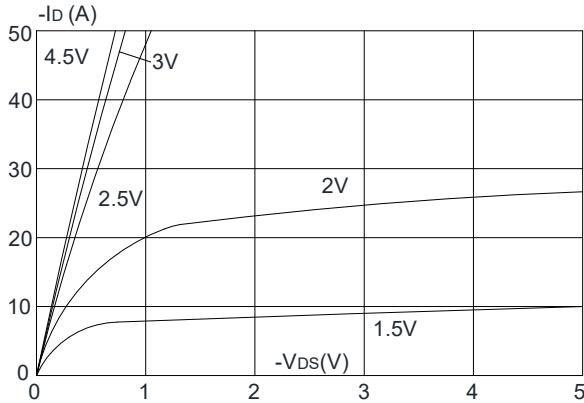


Figure 1: Output Characteristics

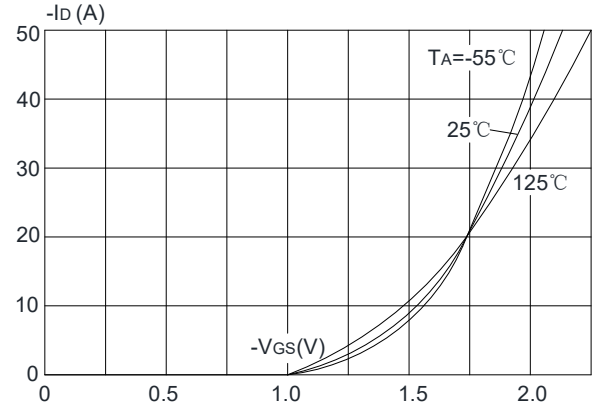


Figure 2: Typical Transfer Characteristics

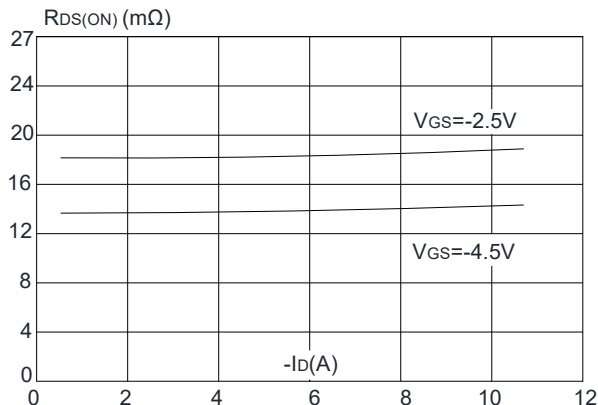


Figure 3: On-resistance vs. Drain Current

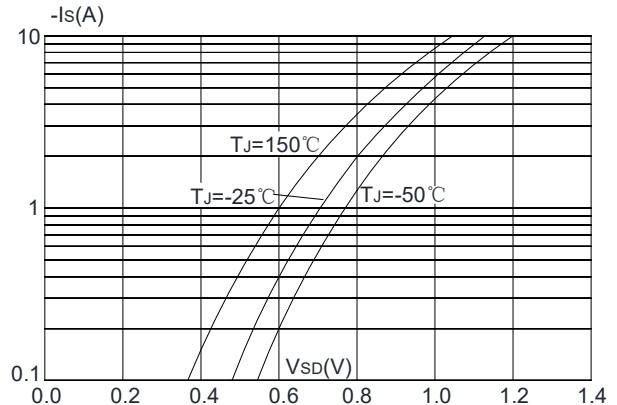


Figure 4: Body Diode Characteristics

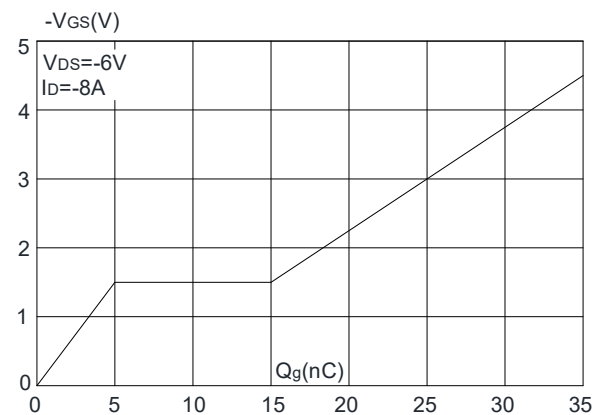


Figure 5: Gate Charge Characteristics

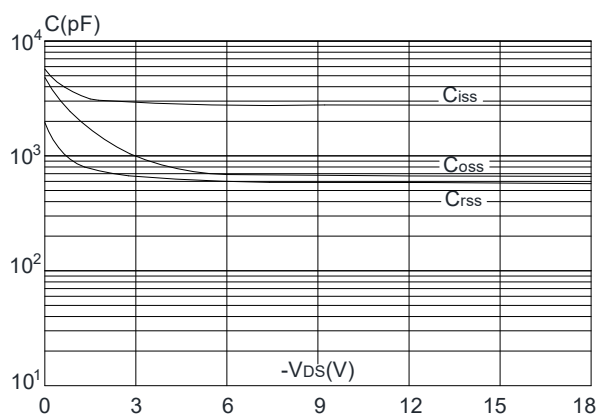


Figure 6: Capacitance Characteristics

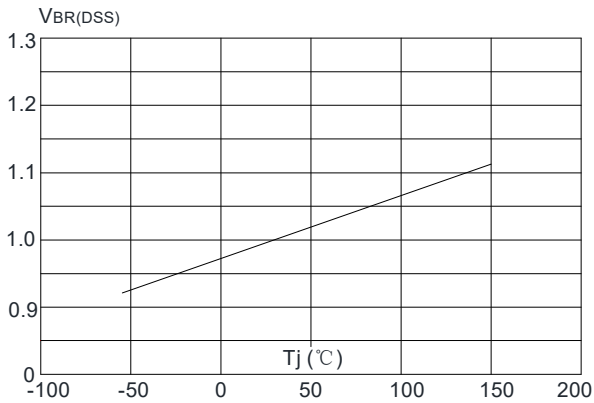


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

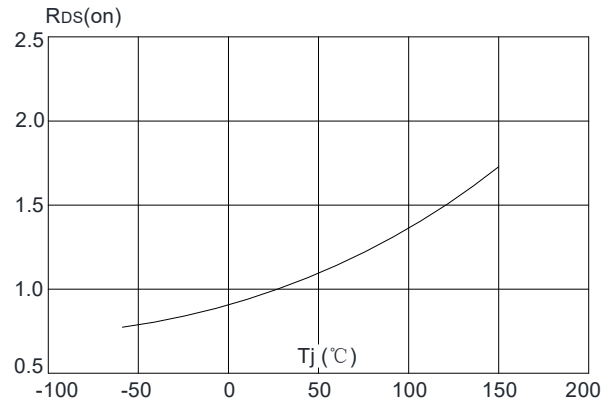


Figure 8: Normalized on Resistance vs. Junction Temperature

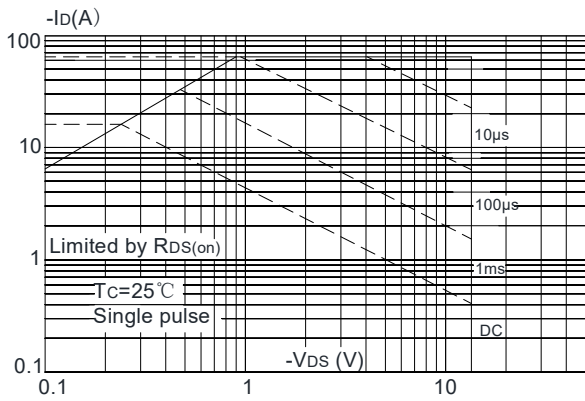


Figure 9: Maximum Safe Operating Area

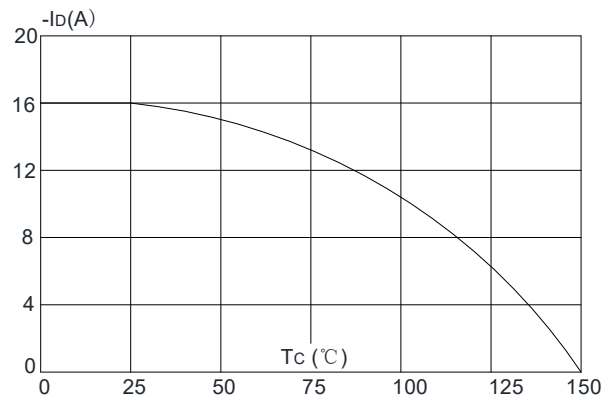


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

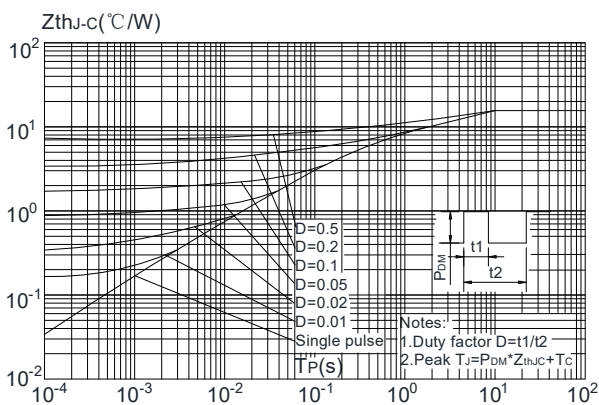
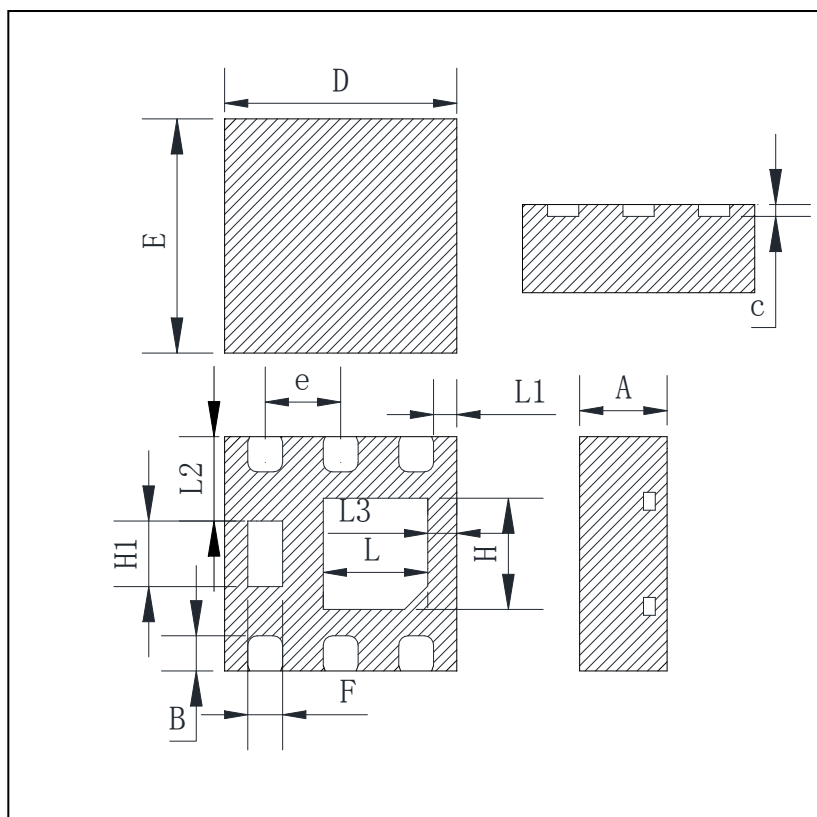


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case

DFN2X2-6 Package Outline Data

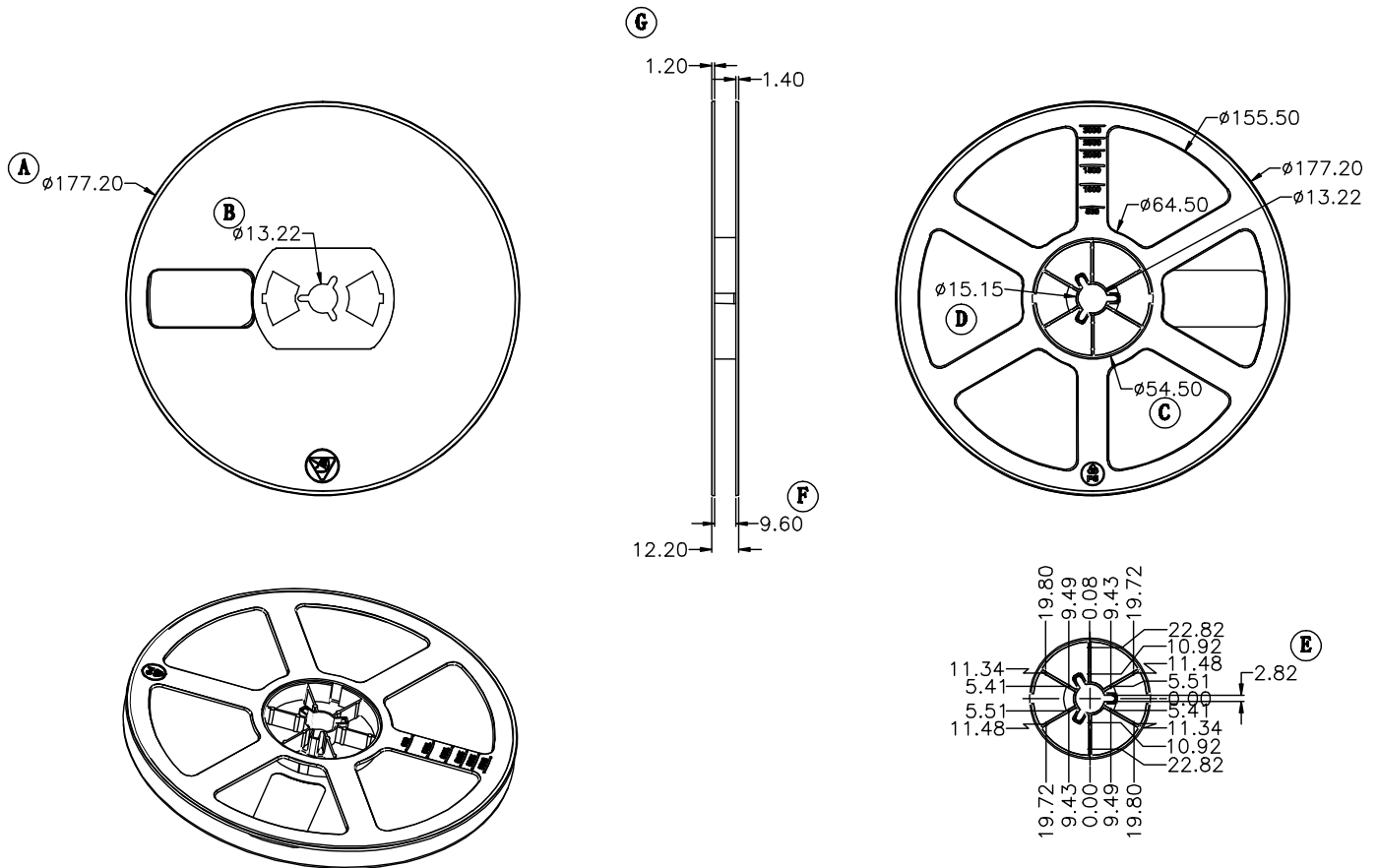


Symbol	Min	Typ	Max
A	0.70	0.75	0.80
B	0.25	0.30	0.35
C	0.153	0.203	0.253
D	1.90	2.00	2.10
E	1.90	2.00	2.10
e	0.60	0.65	0.70
F	0.25	0.30	0.35
H	0.90	1.00	1.10
H1	0.50	0.60	0.65
L	0.80	0.90	1.00
L1	0.15	0.20	0.25
L2	0.60	0.70	0.80
L3	0.25	0.30	0.35

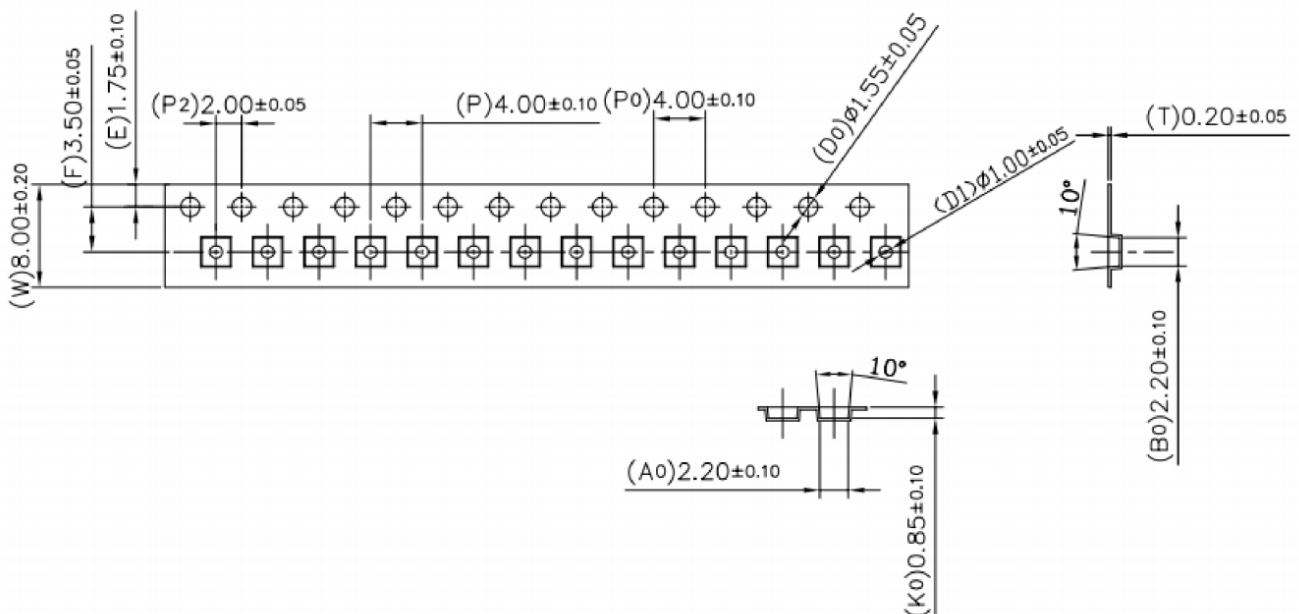
UNIT: mm

Tape & Reel Information

Dimensions in mm



A±1	B±0.3	C±0.2	D±0.2	E±0.2	F+2/-0.3	G±0.2
117.2	13.2	54.5	15.15	2.82	9.6	1.2



Marking Information:

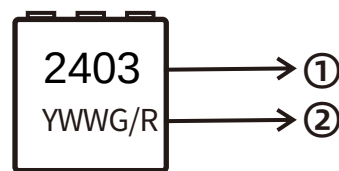
①: Part NO.

②: Date Code (YWWG / R)

Y: Year Code , last digit of the year

WW : Week Code (01-53)

G/R: G(Green) /R(Lead Free)



Previous Version

Version	Date	Subjects (major changes since last revision)
1.0	2025-01-04	Release of final version

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