

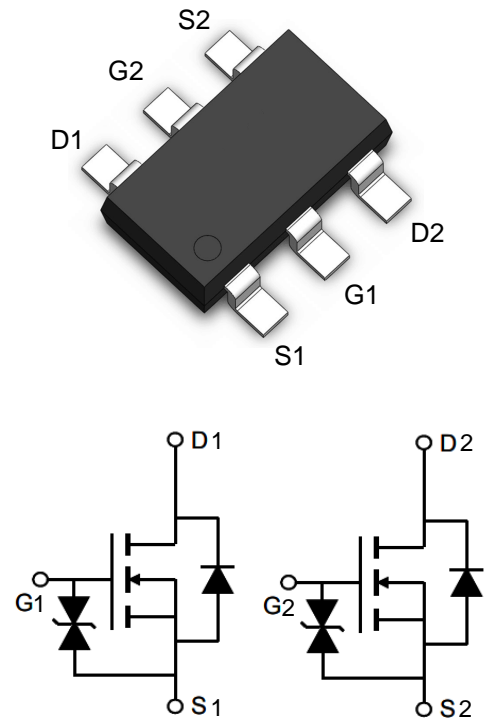
Description:

This Dual N-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) $V_{DS}=50V, I_D=0.4A, R_{DS(on)} < 1200m\Omega @ V_{GS}=10V$ (Typ: $900m\Omega$)
- 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) ESD Protection
- 7) MSL3



Package Marking and Ordering Information:

Part NO.	Marking	Package	Packing
DODX138A	138A	SOT-363D	3000 pcs/Reel

Absolute Maximum Ratings: ($T_A=25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	50	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Continuous Drain Current- $T_A=25^\circ\text{C}^1$	0.4	A
	Continuous Drain Current- $T_A=100^\circ\text{C}^1$	0.28	
I_{DM}	Pulsed Drain Current ²	1.6	
P_D	Power Dissipation	0.3	W
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55-+150	$^\circ\text{C}$

Thermal Characteristics:

Symbol	Parameter	Max	Units
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	400	$^\circ\text{C}/\text{W}$

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

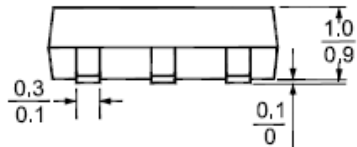
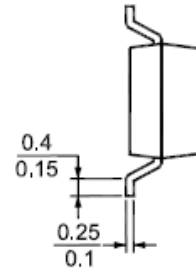
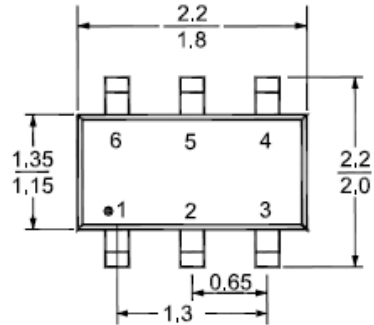
Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\ \mu\text{A}$	50	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{GS}=0V, V_{DS}=50V$	---	---	-1	μA
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0A$	---	---	± 100	nA
On Characteristics						
$V_{GS(th)}$	Gate-Source Threshold Voltage	$V_{GS}=V_{DS}, I_D=250\ \mu\text{A}$	0.6	0.9	1.2	V
$R_{DS(on)}$	Drain-Source On Resistance ³	$V_{GS}=-10V, I_D=0.5A$	---	900	1200	$\text{m}\Omega$
		$V_{GS}=-4.5V, I_D=0.1A$	---	1100	1400	$\text{m}\Omega$
Dynamic Characteristics						
C_{iss}	Input Capacitance	$V_{DS}=25V, V_{GS}=0V, f=1\text{MHz}$	---	30	---	pF
C_{oss}	Output Capacitance		---	4.3	---	
C_{rss}	Reverse Transfer Capacitance		---	3	---	
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time	$V_{DS}=25V, I_D=0.5A,$ $R_{ENG}=25\ \Omega, V_{GS}=10V$	---	3	---	ns
t_r	Rise Time		---	2.7	---	ns
$t_{d(off)}$	Turn-Off Delay Time		---	11	---	ns
t_f	Fall Time		---	8.1	---	ns
Q_g	Total Gate Charge		---	4	---	nC
Q_{gs}	Gate-Source Charge	$V_{GS}=10V, V_{DS}=25V,$	---	0.15	---	nC
Q_{gd}	Gate-Drain "Miller" Charge	$I_D=0.5A$	---	0.31	---	nC
Drain-Source Diode Characteristics						
V_{SD}	Diode Forward Voltage	$V_{GS}=0V, I_{SD}=0.22A$	---	---	1.2	V
I_S	Continuous Drain Current	$V_D=V_G=0V$	---	---	0.4	A
I_{SM}	Pulsed Drain Current		---	---	1.6	A

Notes:

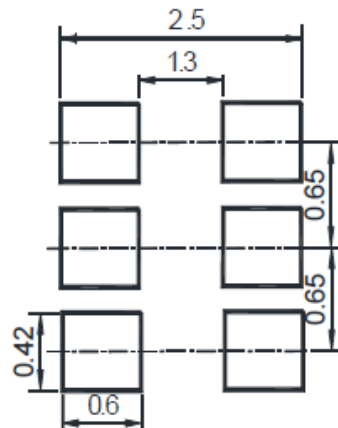
1. Computed continuous current assumes the condition of $T_{j,Max}$ while the actual continuous current depends on the thermal & electro-mechanical application board design
2. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
3. Pulse Test: Pulse Width \leq 300 μ s, Duty Cycle \leq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

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

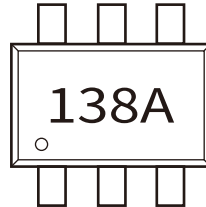
SOT-363D Package Information:



Recommended Soldering Footprint




Marking Information:



Previous Version

Version	Date	Subjects (major changes since last revision)
1.0	2025-02-18	Release of final version

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