WEITRON

WTN9435

Surface Mount P-Channel Enhancement Mode Power MOSFET
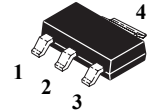
(Pb) Lead(Pb)-Free

2,4 DRAIN

1 GATE

3 SOURCE

DRAIN CURRENT
-6.0 AMPERES
DRAIN SOURCE VOLTAGE
-30 VOLTAGE

1. GATE
2. DRAIN
3. SOURCE
4. DRAIN

SOT-223

Features:

* Super high dense cell design for low $R_{DS}(ON)$
  $R_{DS}(ON) < 50m\Omega$ @ $V_{GS} = -10V$
* Simple Drive Requirement
* Lower On-Resistance
* Fast Switching

Maximum Ratings(T_A=25℃ Unless Otherwise Specified)

Rating	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-30	V
Gate-Source Voltage	V_{GS}	±25	V
Continuous Drain Current[3] ,VGS@10V(T_A=25°C) ,VGS@10V(T_A=70°C)	I_D	-6.0 -4.8	A
Pulsed Drain Current[1]	I_{DM}	-20	A
Total Power Dissipation(T_A=25°C)	P_D	2.7	W
Maximum Junction-ambient[3]	$R_{\theta JA}$	45	°C/W
Operating Junction and Storage Temperature Range	T_J,T_{stg}	-55 ~ +150	°C

Device Marking

WTN9435 = 9435

Electrical Characteristics $(T_A = 25℃$ Unless otherwise noted)

Static

Characteristic	Symbol	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage $V_{GS} = 0, I_D = -250\mu A$	$V_{(BR)DSS}$	-30	-	-	V
Gate-Source Threshold Voltage $V_{DS} = V_{GS}, I_D = -250\mu A$	$V_{GS(Th)}$	-1.0	-	-3.0	V
Gate-Source Leakage Current $V_{GS} = \pm 25V$	I_{GSS}	-	-	±100	nA
Drain-Source Leakage Current$(T_j=25℃)$ $V_{DS} = -30A, V_{GS} = 0$ Drain-Source Leakage Current$(T_j=70℃)$ $V_{DS} = -24V, V_{GS} = 0$	I_{DSS}	- -	- -	-1 -25	μA
Drain-Source On-Resistance[2] $V_{GS} = -10A, I_D = -5.3A$ $V_{DS} = -4.5A, I_D = -4.2A$	$R_{DS(ON)}$	- -	- -	50 100	$m\Omega$
Forward Transconductance $V_{DS} = -10A, I_D = -5.3A$	g_{fs}	-	10	-	S

Dynamic

	Symbol	Min	Typ	Max	Unit
Input Capacitance $V_{GS} = 0V, V_{DS} = -15V, f = 1.0MHz$	C_{iss}	-	507	912	pF
Output Capacitance $V_{GS} = 0V, V_{DS} = -15V, f = 1.0MHz$	C_{oss}	-	222	-	
Reverse Transfer Capacitance $V_{GS} = 0V, V_{DS} = -15V, f = 1.0MHz$	C_{rss}	-	158	-	

Switching

Turn-on Delay Time[2] V_{DS}=-15V,V_{GS}=-10V,I_D=1A,R_D=15Ω,R_G=6Ω	$t_{d(on)}$	-	11	-	ns
Rise Time V_{DS}=-15V,V_{GS}=-10V,I_D=1A,R_D=15Ω,R_G=6Ω	t_r	-	8	-	
Turn-off Delay Time V_{DS}=-15V,V_{GS}=-10V,I_D=1A,R_D=15Ω,R_G=6Ω	$t_{d(off)}$	-	25	-	
Fall Time V_{DS}=-15V,V_{GS}=-10V,I_D=1A,R_D=15Ω,R_G=6Ω	t_f	-	17	-	
Total Gate Charge[2] V_{DS}=-24V,V_{GS}=-4.5V,I_D=-5.3A	Q_g	-	9.2	16	nC
Gate-Source Charge V_{DS}=-24V,V_{GS}=-4.5V,I_D=-5.3A	Q_{gs}	-	2.8	-	
Gate-Drain Change V_{DS}=-24V,V_{GS}=-4.5V,I_D=-5.3A	Q_{gd}	-	5.2	-	

Source-Drain Diode Characteristics

Forward On Voltage[2] V_{GS}=0V, I_S=-2.3A	V_{SD}	-	-	-1.2	V
Reverse Recovery Time V_{GS}=0V, I_S=-5.3A, dI/dt=100A/μs	T_{rr}	-	29	-	ns
Reverse Recovery Charge V_{GS}=0V, I_S=-5.3A, dI/dt=100A/μs	Q_{rr}	-	20	-	nC

Note:

1. Pulse width limited by max, junction temperature.

2. Pulse width ≤ 300μs, duty cycle ≤ 2%.

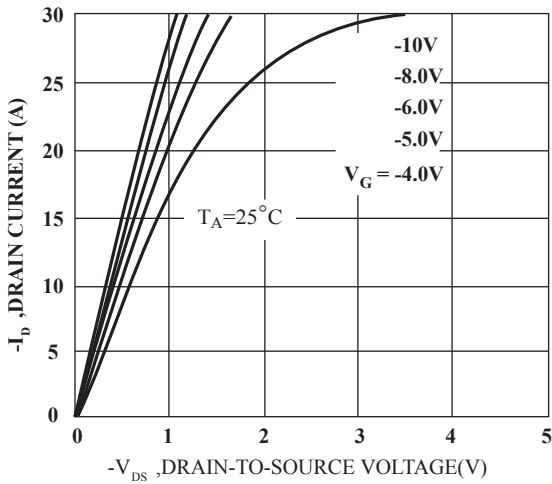3. Surface mounted on 1 in² copper pad of FR4 board; 120°C/W when mounted on Min, copper pad.
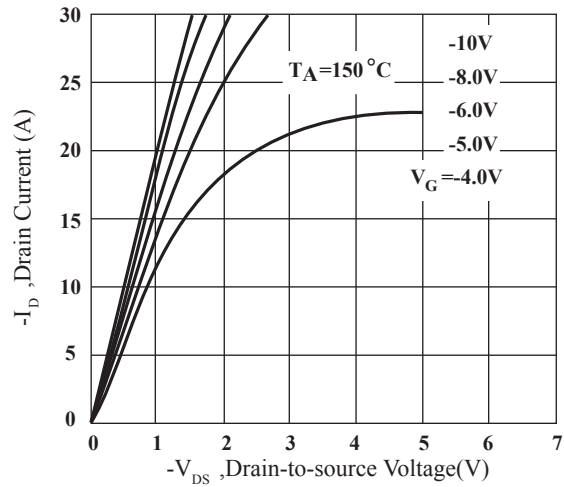
FIG.1 Typical Output Characteristics
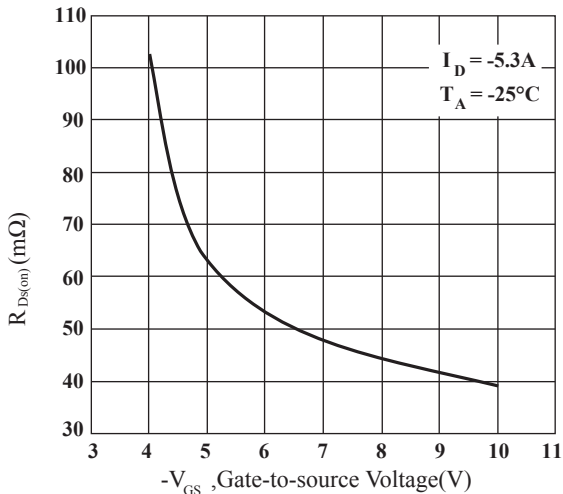
Fig.2 Typical Output Characteristics
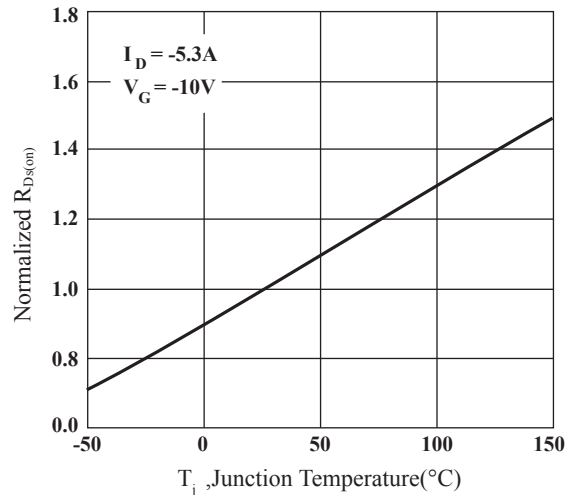
Fig.3 On-Resistance v.s. Gate Voltage
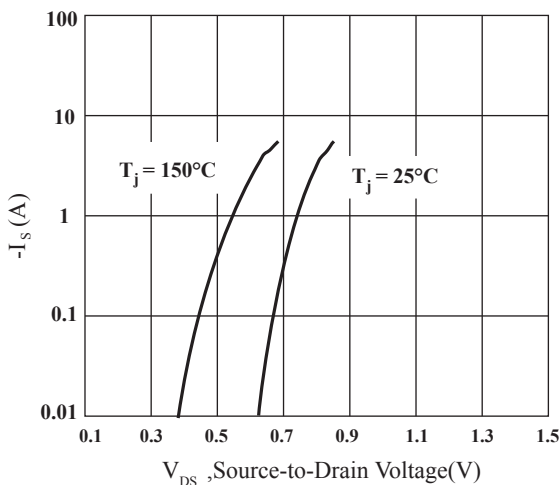
Fig.4 Normalized OnResistance

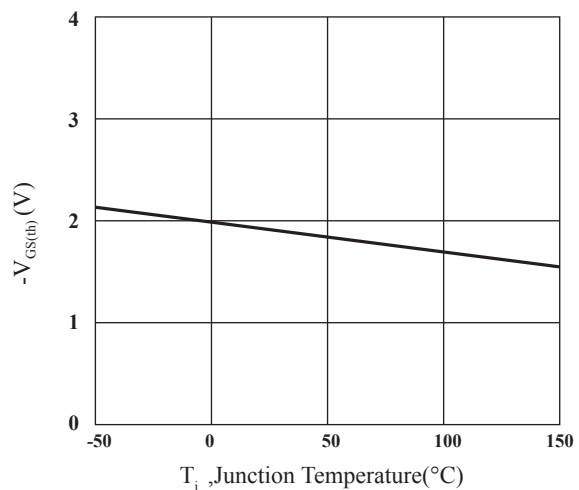**Fig.5 Forward Characteristics of Reverse Diode**

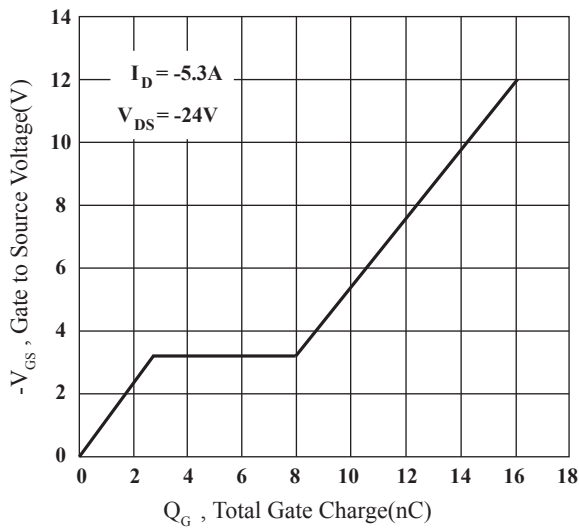**Fig.6 Gate Threshold Voltage v.s. Junction Temperature**
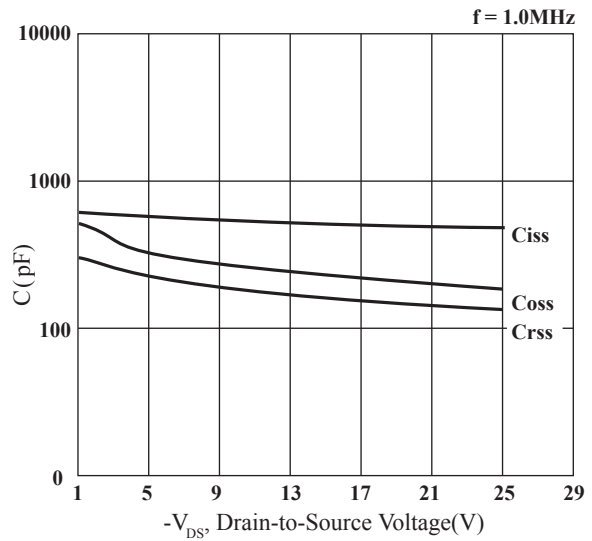
Fig 7. Gate Charge Characteristics
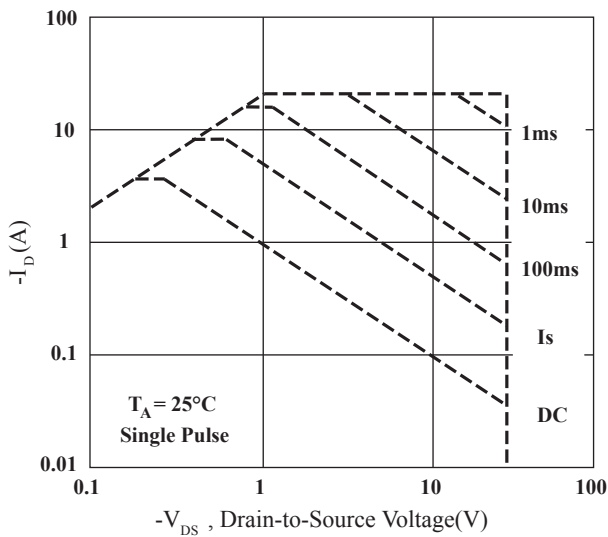
Fig 8. Typical Capacitance Characteristics
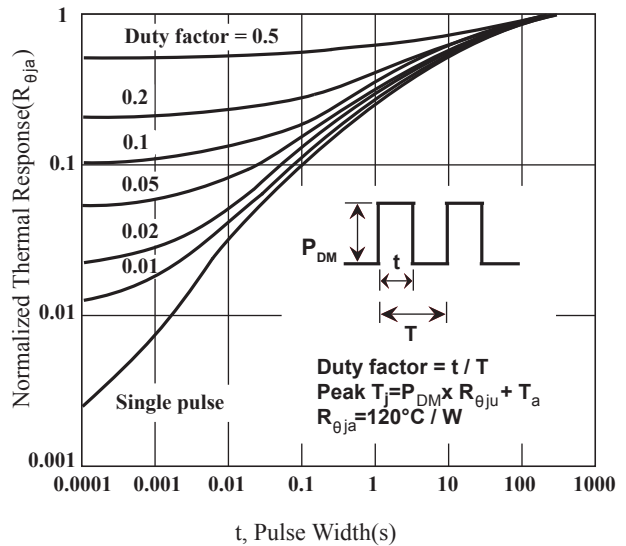
Fig 9. Maximum Safe Operation Area

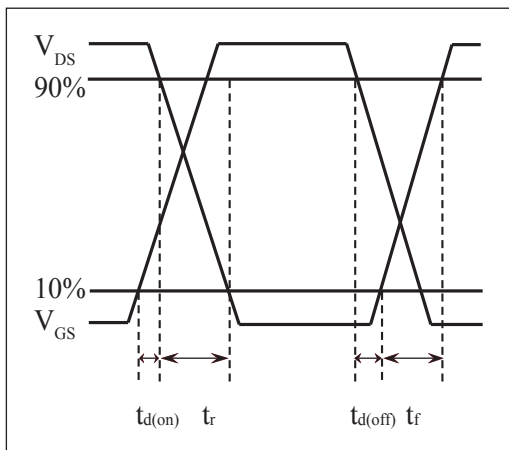**Fig 10. Effective Transient Thermal Impedance**

Fig 11. Switching Time Circuit

Fig.12 Gate Charge Waveform
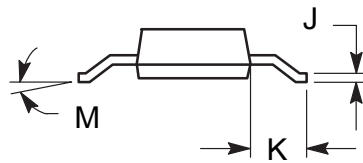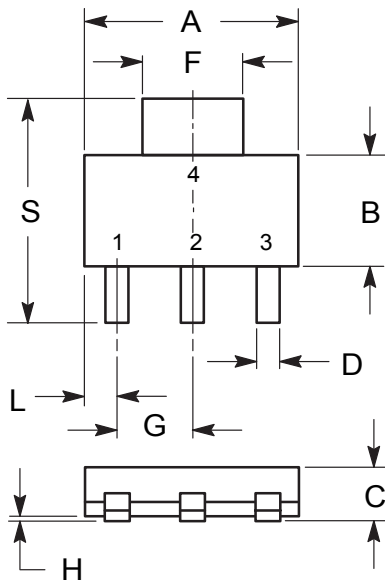
SOT-223 Outline Dimensions

unit:mm

DIM	MILLIMETERS	
	MIN	MAX
A	6.30	6.70
B	3.30	3.70
C	1.50	1.75
D	0.60	0.89
F	2.90	3.20
G	2.20	2.40
H	0.020	0.100
J	0.24	0.35
K	1.50	2.00
L	0.85	1.05
M	0°	10°
S	6.70	7.30