

Surface Mount N-Channel Enhancement Mode MOSFET

Pb Lead(Pb)-Free

Features:

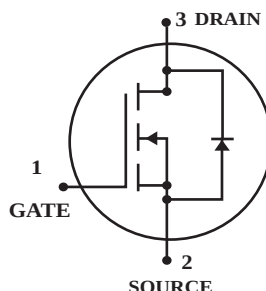
*Super high dense cell design for low $R_{DS(ON)}$

$R_{DS(ON)} < 30 \text{ m}\Omega @ V_{GS} = 10\text{V}$

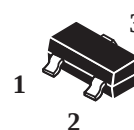
$R_{DS(ON)} < 42 \text{ m}\Omega @ V_{GS} = 4.5\text{V}$

*Rugged and Reliable

*SOT-23 Package



DRAIN CURRENT
4.6 AMPERES
DRAIN SOURCE VOLTAGE
30 VOLTAGE



SOT-23

Maximum Ratings (TA=25°C Unless Otherwise Specified)

Rating	Symbol	Value	Unite
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ($T_J = 125^\circ\text{C}$) ⁽¹⁾	I_D	4.6	A
Pulsed Drain Current ⁽²⁾	I_{DM}	16	A
Drain-Source Diode Forward Current (1)	I_S	1.25	A
Power Dissipation (1)	P_D	1.25	W
Maximax Junction-to-Ambient	$R_{\theta JA}$	100	$^\circ\text{C/W}$
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55 to 150	$^\circ\text{C}$

Device Marking

WT3402=T02

Electrical Characteristics (T_A=25 °C Unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
----------------	--------	-----	-----	-----	------

Static (2)

Drain-Source Breakdown Voltage V _{GS} =0V, I _D =250 uA	V _{(BR)DSS}	30	-	-	V
Gate-Source Threshold Voltage V _{DS} =V _{GS} , I _D =250 uA	V _{GS(th)}	1	1.5	2.5	V
Gate-Source Leakage Current V _{DS} =0V, V _{GS} =±20V	I _{GSS}	-	-	±100	nA
Zero Gate Voltage Drain Current V _{DS} =24V, V _{GS} =0V	I _{DSS}	-	-	1	uA
Drain-Source On-Resistance V _{GS} =10V, I _D =4.6A V _{GS} =4.5V, I _D =4.0A	r _{DS(on)}	- -	26 38	30 42	mΩ
On-State Drain Current V _{DS} =5V, V _{GS} =4.5A	I _{D(on)}	10	-	-	A
Forward Transconductance V _{DS} =5V, I _D =4.6A	g _{fs}	-	5	-	S

Dynamic(3)

Input Capacitance V _{DS} =15V, V _{GS} =0V, f=1MHZ	C _{iss}	-	782	-	pF
Output Capacitance V _{DS} =15V, V _{GS} =0V, f=1MHZ	C _{oss}	-	135	-	
Reverse Transfer Capacitance V _{DS} =15V, V _{GS} =0V, f=1MHZ	C _{rss}	-	93	-	

Switching(3)

Turn-On Delay Time V _{GS} = 10V, V _{DD} =15V, I _D =1A, R _L =15 Ω, R _{GEN} =6Ω	t _{d(on)}	-	4.8	-	nS
Rise Time V _{GS} = 10V, V _{DD} =15V, I _D =1A, R _L =15 Ω, R _{GEN} =6Ω	t _r	-	3.9	-	nS
Turn-Off Delay Time V _{GS} = 10V, V _{DD} =15V, I _D =1A, R _L =15 Ω, R _{GEN} =6Ω	t _{d(off)}	-	27.7	-	nS
Fall Time V _{GS} = 10V, V _{DD} =15V, I _D =1A, R _L =15 Ω, R _{GEN} =6Ω	t _f	-	5.5	-	nS
Total Gate Charge V _{DS} =15V, I _D =4.6A, V _{GS} =10V	Q _g	-	15.8	-	nc
Gate-Source Charge V _{DS} =15V, I _D =4.6A, V _{GS} =10V	Q _{gs}	-	2	-	nc
Gate-Drain Charge V _{DS} =15V, I _D =4.6A, V _{GS} =10V	Q _{gd}	-	3	-	nc
Drain-Source Diode Forward Voltage V _{GS} =0V, I _S =1.25A	V _{SD}	-	0.78	1.2	V

Note: 1. Surface Mounted on FR4 Board t ≤ 10sec.
 2. Pulse Test : PW ≤ 300us, Duty Cycle ≤ 2%.
 3. Guaranteed by Design, not Subject to Production Testing.

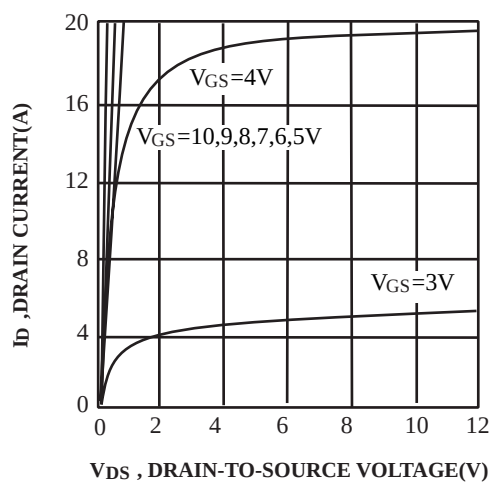


FIG.1. Output Characteristics

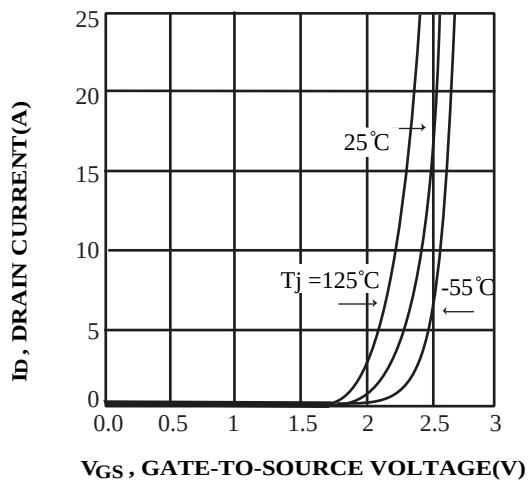


FIG.2 Transfer Characteristics

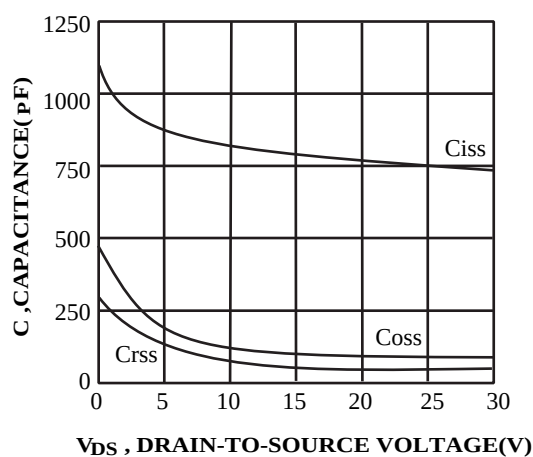


FIG.3 Capacitance

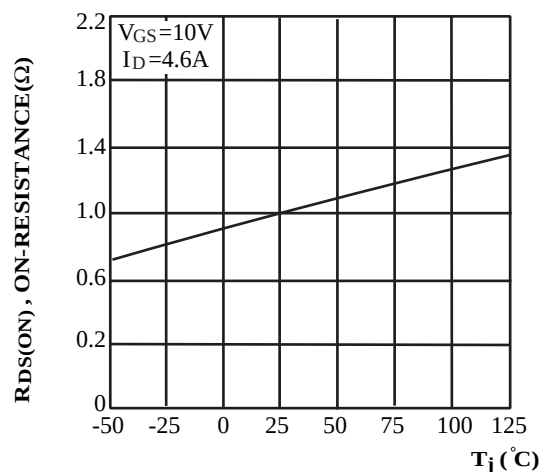


FIG.4 On-Resistance Variation with Temperature

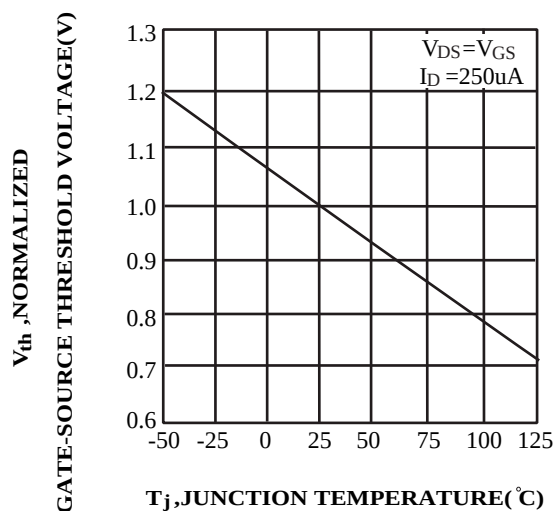


FIG.5 Gate Threshold Variation with Temperature

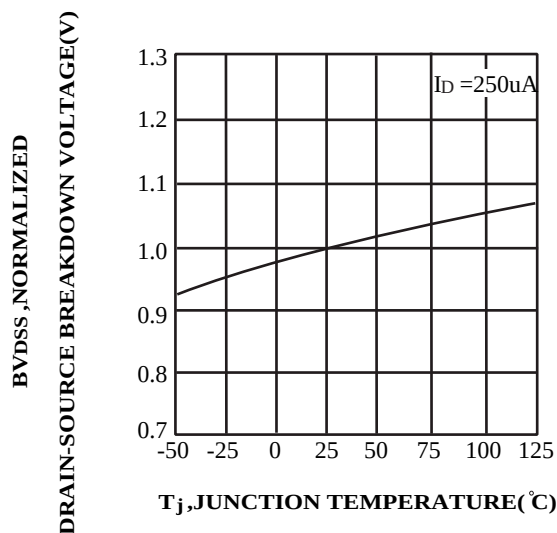
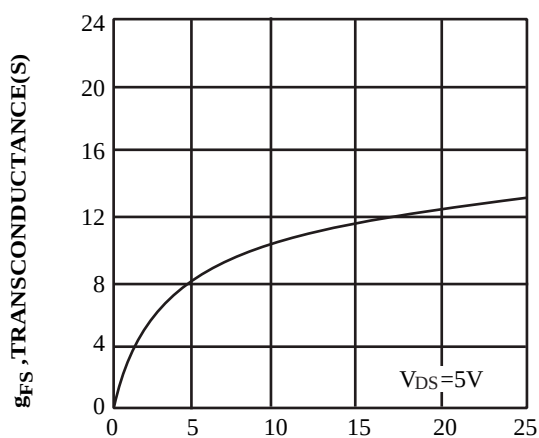
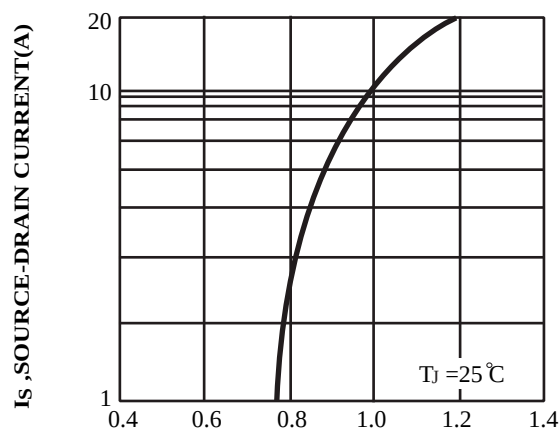


FIG.6 Breakdown Voltage Variation with Temperature



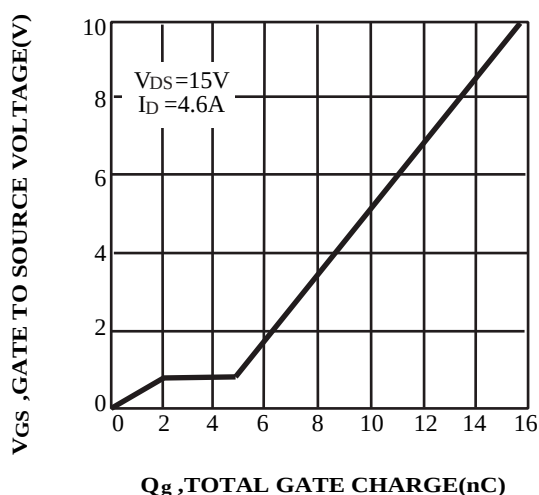
I_{DS} ,DRAIN-SOURCE CURRENT(A)

FIG.7 Transconductance Variation with Drain Current



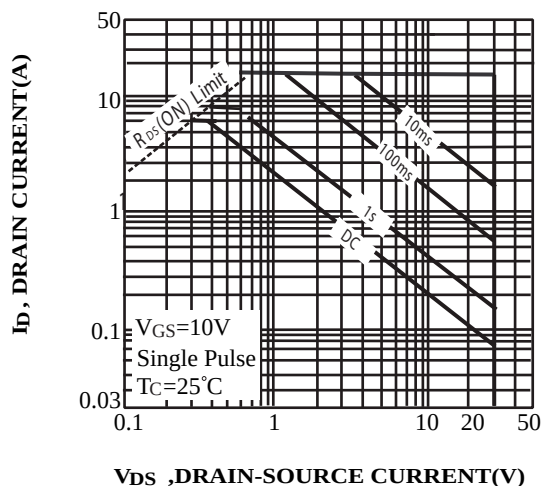
V_{SD} ,BODY DIODE FORWARD VOLTAGE(V)

FIG.8 Body Diode Forward Voltage Variation with Source Current



Q_g ,TOTAL GATE CHARGE(nC)

FIG.9 Gate Charge



V_{DS} ,DRAIN-SOURCE VOLTAGE(V)

FIG.10 Maximum Safe Operating Area

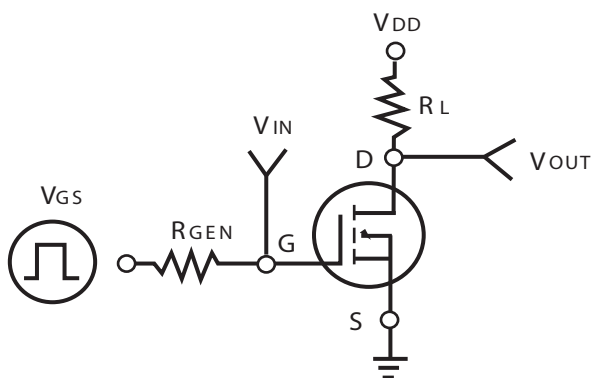


FIG.11 Switching Test Circuit

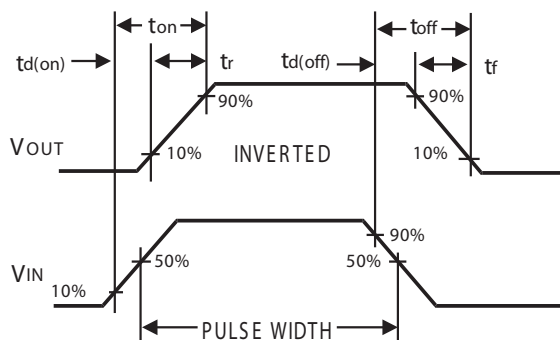


FIG.12 Switching Waveforms

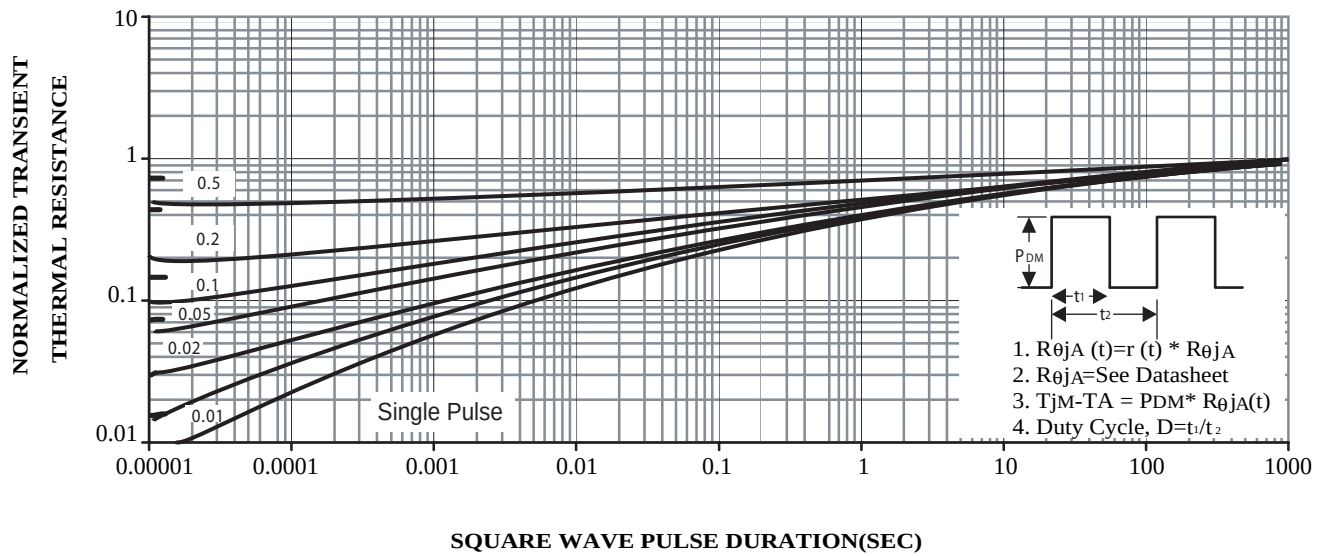
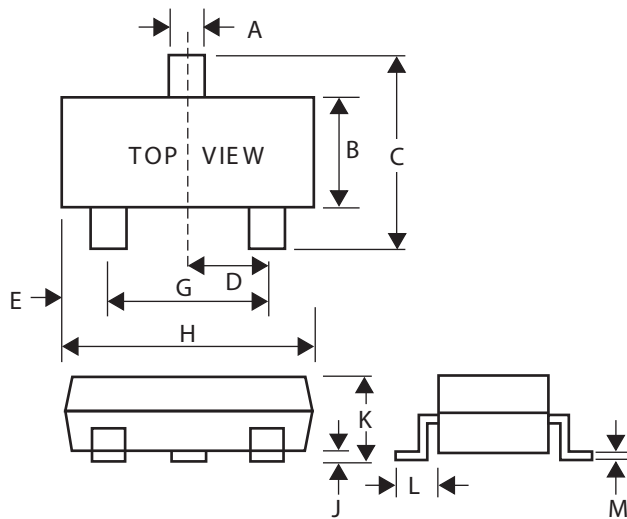


FIG.13 NORMALIZED THERMAL TRANSIENT IMPEDANCE CUREVE

SOT-23 Package Outline Dimensions

Unit:mm



Dim	Min	Max
A	0.35	0.51
B	1.19	1.40
C	2.10	3.00
D	0.85	1.05
E	0.46	1.00
G	1.70	2.10
H	2.70	3.10
J	0.01	0.13
K	0.89	1.10
L	0.30	0.61
M	0.076	0.25