

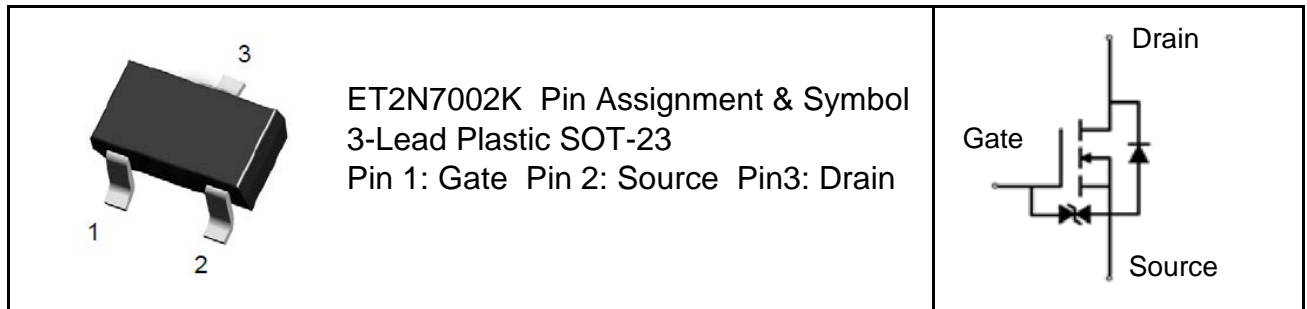
### N-Channel High Density Trench MOSFET (60V,0.5A)

#### PRODUCT SUMMARY

$V_{DSS}$	$I_D$	$R_{DS(on)}$ (m $\Omega$ )Typ
60V	500mA	2.5 @ $V_{GS} = 10V, I_D=0.5A$
		3.0 @ $V_{GS} = 5V, I_D=0.05A$

#### Features

- High speed switch
- Advanced Trench Process Technology
- SOT-23 package
- ESD protected up to 2KV
- Lead (Pb) -free and halogen-free



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

Symbol	Parameter	Ratings	Units
$V_{DS}$	Drain-Source Voltage	60	V
$V_{GS}$	Gate-Source Voltage	$\pm 15$	V
$I_D$	Drain Current (Continuous)	0.2	A
$I_{DM}$	Drain Current (Pulsed) <sup>a</sup>	0.8	A
$P_D$	Total Power Dissipation @ $T_A=25^\circ\text{C}$	0.3	W
$I_S$	Maximum Diode Forward Current	0.5	A
$T_J, T_{stg}$	Operating Junction and Storage Temperature Range	-55 to +150	$^\circ\text{C}$
$R_{QJA}$	Thermal Resistance Junction to Ambient (PCB mounted) <sup>b</sup>	357	$^\circ\text{C/W}$

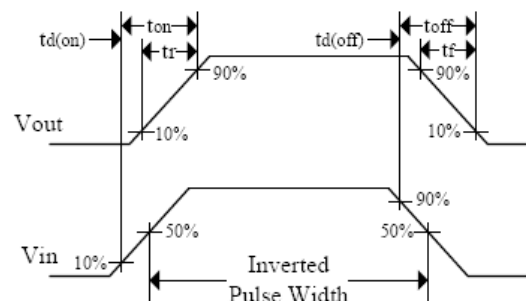
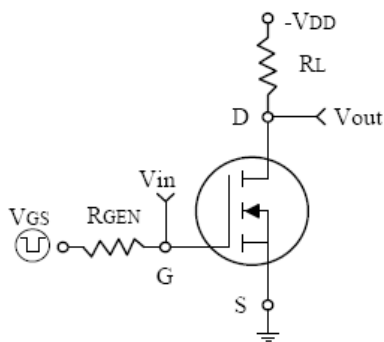
a: Repetitive Rating: Pulse width limited by the maximum junction temperature.

b: 1-in<sup>2</sup> 2oz Cu PCB board

### Electrical Characteristics (T<sub>A</sub>=25°C, unless otherwise noted)

Symbol	Characteristic	Test Conditions	Min.	Typ.	Max.	Unit
<b>• Off Characteristics</b>						
BV <sub>DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V, I <sub>D</sub> =10μA	60	-	-	V
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>DS</sub> =60V, V <sub>GS</sub> =0V	-	-	1	μA
I <sub>GSS</sub>	Gate-Body Leakage Current	V <sub>GS</sub> =±15V, V <sub>DS</sub> =0V	-	-	±1	μA
<b>• On Characteristics</b>						
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	1.35	-	0	V
R <sub>DS(on)</sub>	Drain-Source On-State Resistance	V <sub>GS</sub> =10V, I <sub>D</sub> =0.5A	-	2.5	4.0	Ω
		V <sub>GS</sub> =5V, I <sub>D</sub> =0.05A	-	3.0	4.0	
<b>• Dynamic Characteristics</b>						
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> =25V, V <sub>GS</sub> =0V, f=1MHz	-	-	60	PF
C <sub>oss</sub>	Output Capacitance		-	-	30	
C <sub>rss</sub>	Reverse Transfer Capacitance		-	-	10	
<b>• Switching Characteristics</b>						
t <sub>d(on)</sub>	Turn-on Delay Time	V <sub>DD</sub> =15V, R <sub>L</sub> =23Ω, I <sub>D</sub> =0.5A, V <sub>GEN</sub> =10V, R <sub>G</sub> =25Ω	-	-	15	nS
t <sub>d(off)</sub>	Turn-off Delay Time		-	-	15	
<b>• Drain-Source Diode Characteristics</b>						
V <sub>SD</sub>	Drain-Source Diode Forward	V <sub>GS</sub> =0V, I <sub>S</sub> =0.2A	-	-	2.5	V

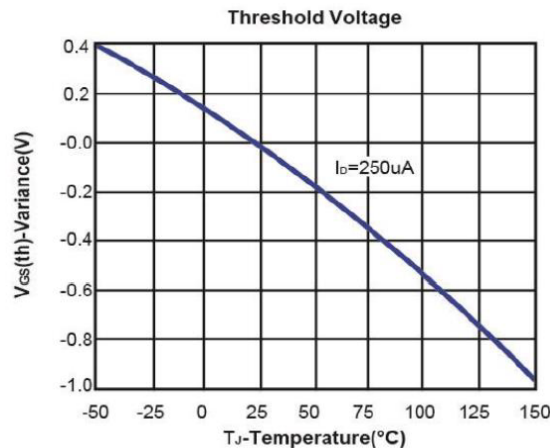
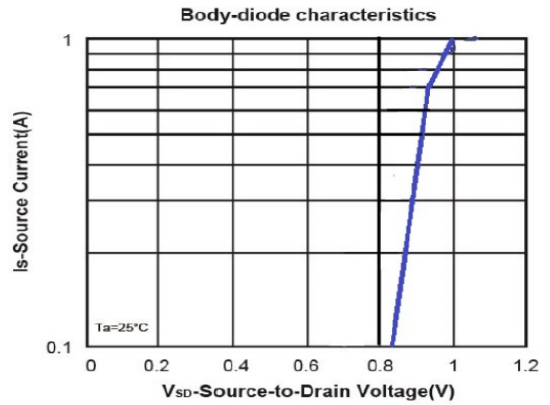
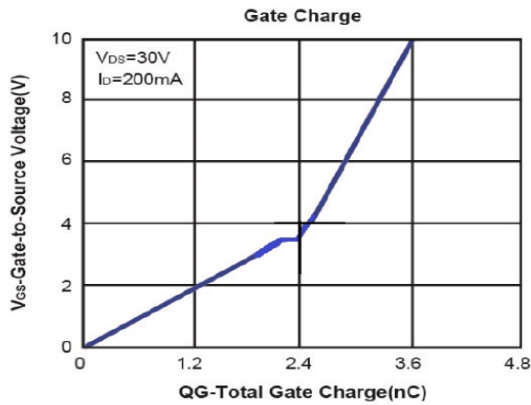
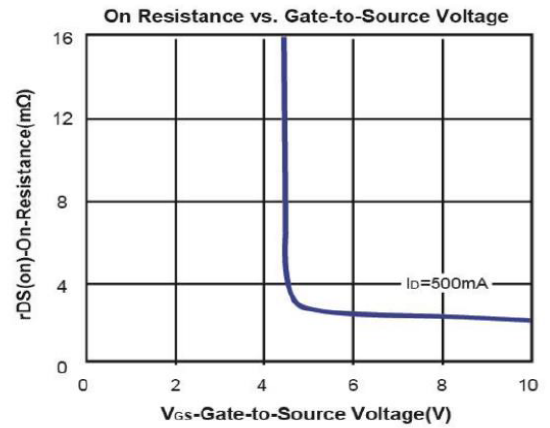
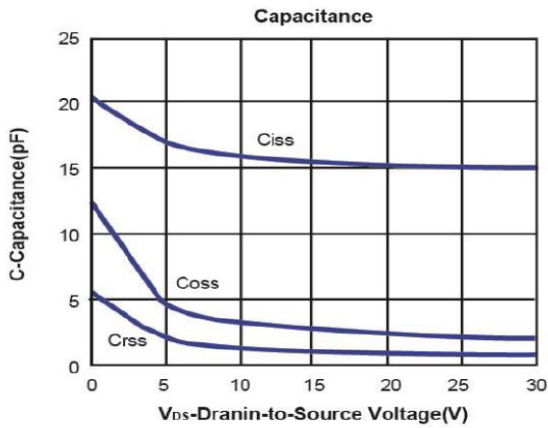
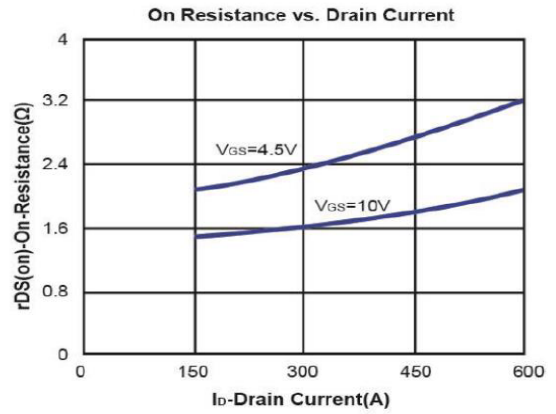
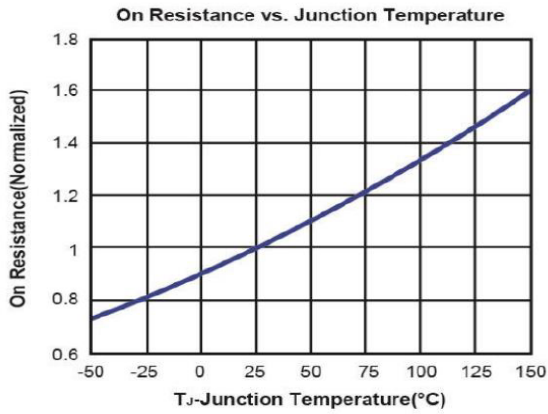
Note: Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%



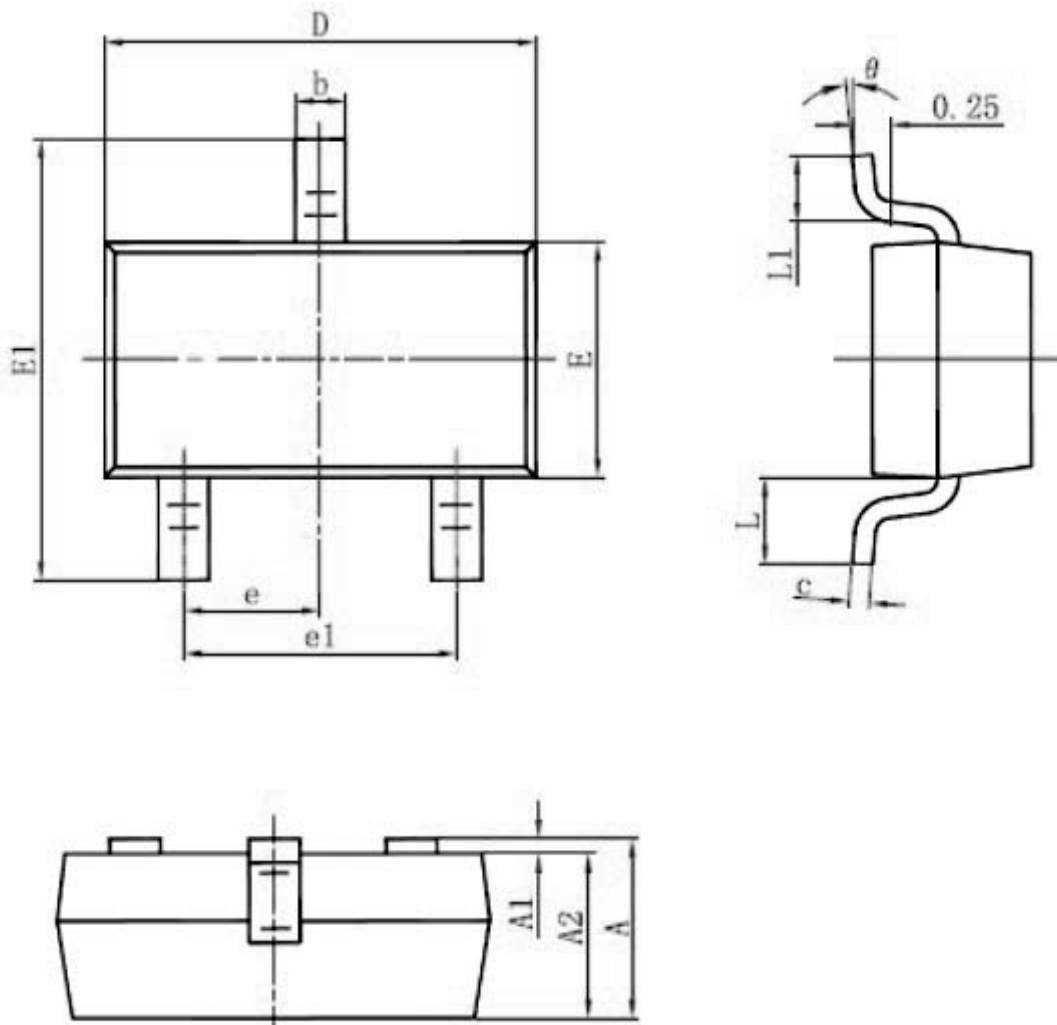
Switching Test Circuit and Switching Waveforms



### Typical Characteristics Curves (Ta=25°C, unless otherwise note)



### SOT-23 PACKAGE OUTLINE DIMENSIONS



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP.		0.037 TYP.	
e1	1.800	2.000	0.071	0.079
L	0.550 REF.		0.022 REF.	
L1	0.300	0.500	0.012	0.020
$\theta$	0°	8°	0°	8°

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