



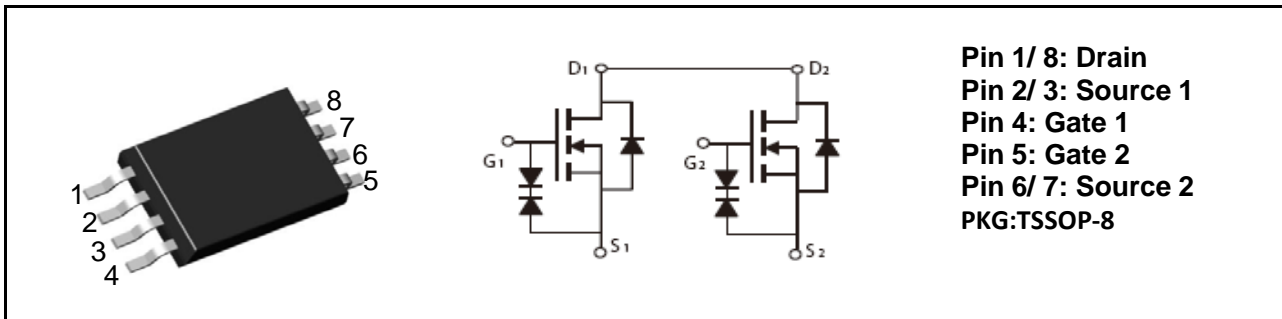
Dual N-Channel High Density Trench MOSFET (20V, 7A)

PRODUCT SUMMARY

V_{DSS}	I_D	$R_{DS(on)}$ (m Ω) Typ.
20V	7.0A	15 @ $V_{GS} = 4.5V, I_D=7A$
		16 @ $V_{GS} = 4.0V, I_D=7A$
		16.5 @ $V_{GS} = 3.7V, I_D=5.5A$
		18 @ $V_{GS} = 2.5V, I_D=5.5A$

Features

- Advanced Trench Process Technology
- High Density Cell Design for Ultra Low On-Resistance
- Surface mount Package
- Lead (Pb) -free and halogen-free



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

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	20	V
V_{GS}	Gate-Source Voltage	± 10	V
I_D	Drain Current (Continuous)	7	A
I_{DM}	Drain Current (Pulsed) ^a	30	A
P_D	Total Power Dissipation @ $T_A=25^\circ C$	1.5	W
I_S	Maximum Diode Forward Current	1.5	A
T_J, T_{stg}	Operating Junction and Storage Temperature Range	-55 to +150	$^\circ C$
R_{QJA}	Thermal Resistance Junction to Ambient (PCB mounted) ^b	83	$^\circ C/W$

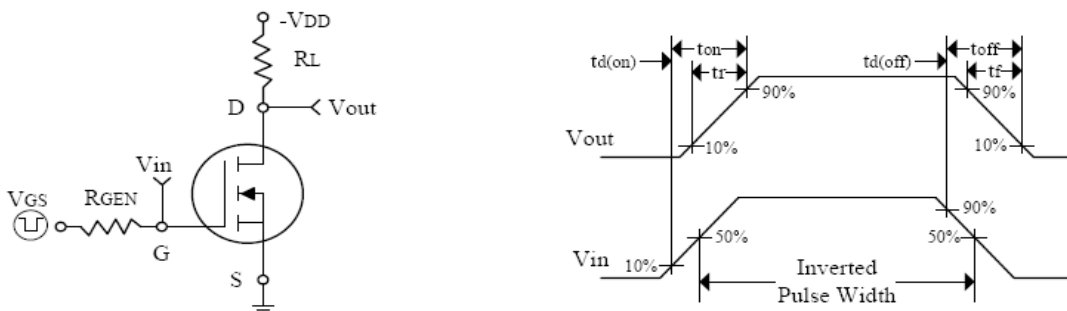
a: Repetitive Rating: Pulse width limited by the maximum junction temperature.

b: 1-in² 2oz Cu PCB board

Electrical Characteristics (T_A=25°C, unless otherwise noted)

Symbol	Characteristic	Test Conditions	Min.	Typ.	Max.	Unit
• Off Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250uA	20	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =20V, V _{GS} =0V	-	-	1	μA
I _{GSS}	Gate-Body Leakage Current	V _{GS} =±10V, V _{DS} =0V	-	-	±10	μA
• On Characteristics						
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250uA	0.6	0.65	1.2	V
R _{DS(on)}	Drain-Source On-State Resistance	V _{GS} =4.5V, I _D =7A	-	15	20	mΩ
		V _{GS} =3.7V, I _D =5.5A	-	16.5	25	
		V _{GS} =2.5V, I _D =5.5A	-	18	28	
• Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =6V, V _{GS} =0V, f=1MHz	-	40	-	PF
C _{oss}	Output Capacitance		-	148	-	
C _{rss}	Reverse Transfer Capacitance		-	15	-	
• Switching Characteristics						
Q _g	Total Gate Charge	V _{DS} =10V, I _D =7A, V _{GS} =4.5V	-	5	-	nC
Q _{gs}	Gate-Source Charge		-	1.2	-	
Q _{gd}	Gate-Drain Charge		-	3.8	-	
t _{d(on)}	Turn-on Delay Time	V _{DD} =10V, R _L =1.2Ω, I _D =1A, V _{GEN} =10V, R _G =6Ω	-	487	-	nS
t _r	Turn-on Rise Time		-	800	-	
t _{d(off)}	Turn-off Delay Time		-	1720	-	
t _f	Turn-off Fall Time		-	6180	-	
• Drain-Source Diode Characteristics						
V _{SD}	Drain-Source Diode Forward	V _{GS} =0V, I _S =1.7A	-	-	1.2	V

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



Switching Test Circuit and Switching Waveforms

Typical Characteristics Curves ($T_a=25^\circ\text{C}$, unless otherwise note)

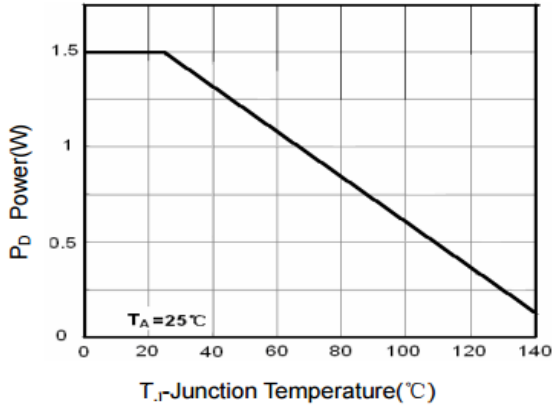


Figure 1 Power Dissipation

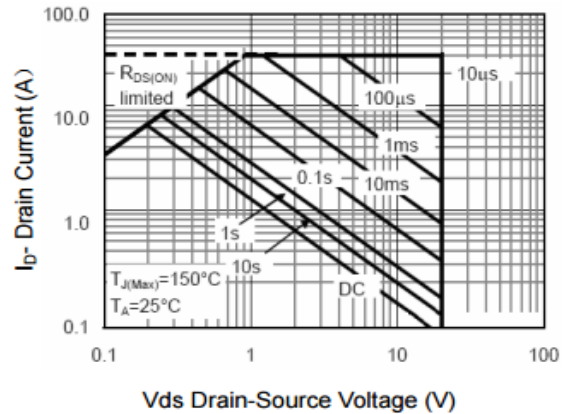


Figure 2: Safe Operation Area

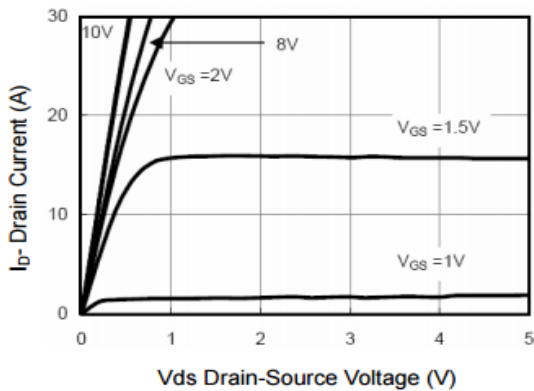


Figure 3 Output Characteristics

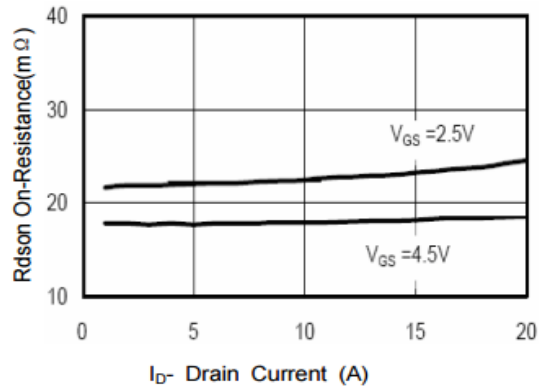


Figure 4 Drain-Source On-Resistance

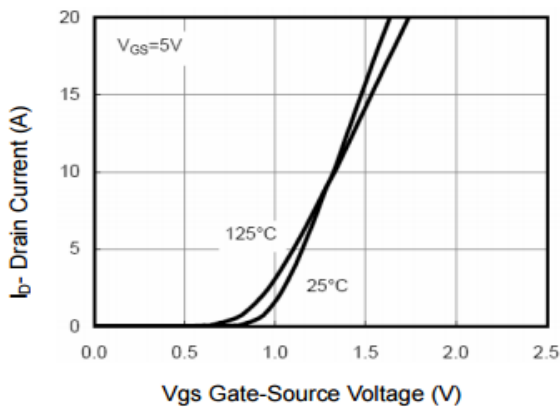


Figure 5 Transfer Characteristics

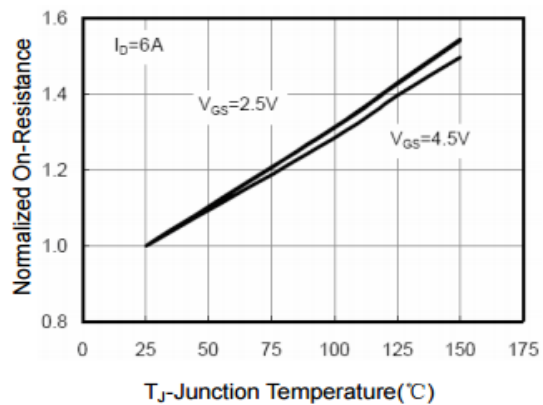


Figure 6 Drain-Source On-Resistance

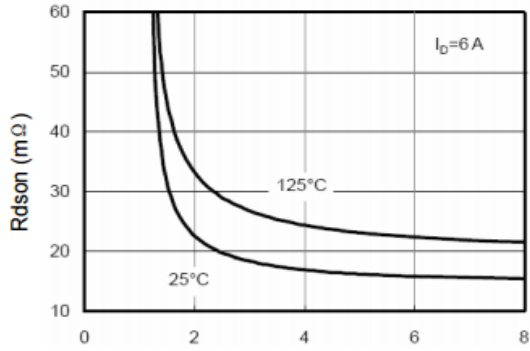


Figure 7 R_{dson} vs V_{gs}

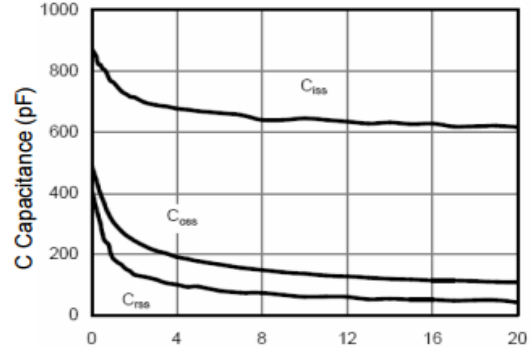


Figure 8 Capacitance vs V_{ds}

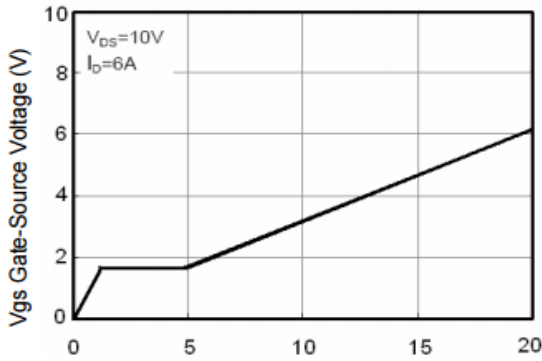


Figure 9 Gate Charge

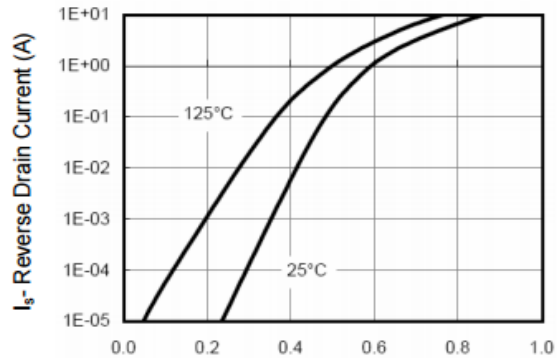


Figure 10 Source- Drain Diode Forward

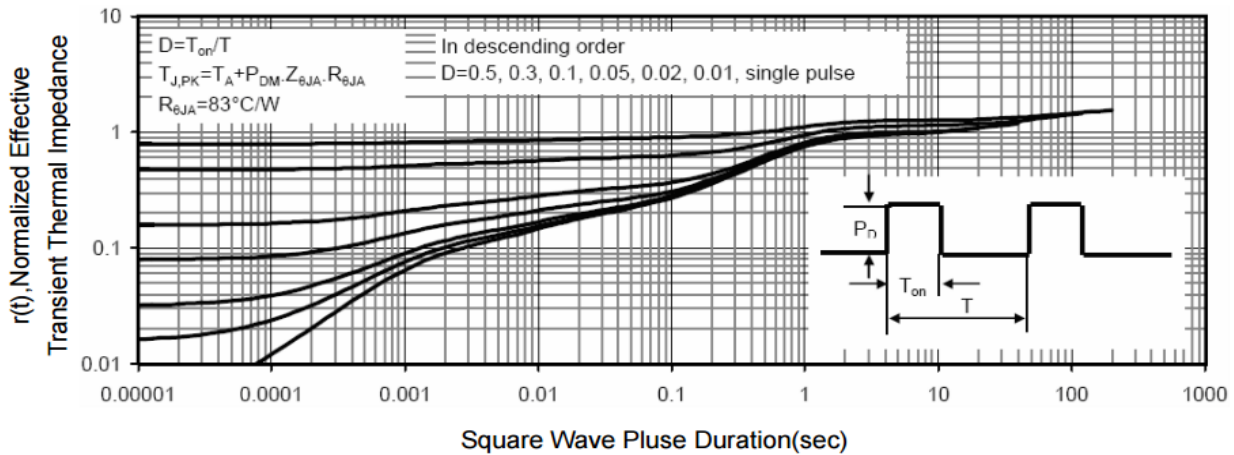
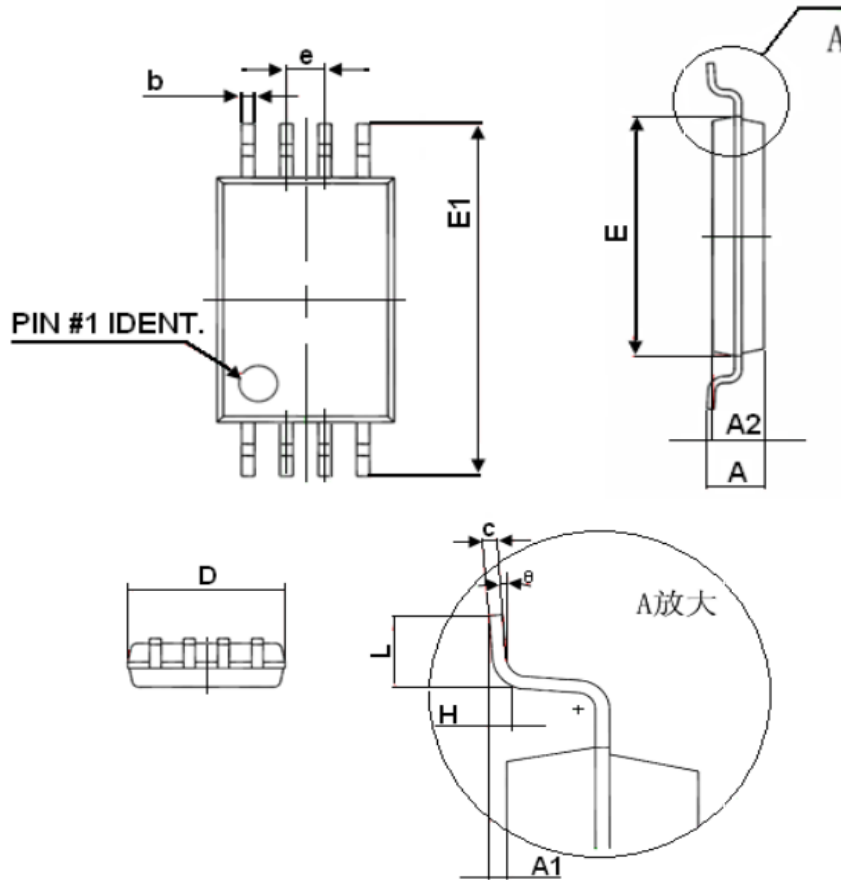


Figure 11 Normalized Maximum Transient Thermal Impedance

TSSOP8 PACKAGE OUTLINE DIMENSIONS



Symbol	Dimensions In Millimeters	
	Min	Max
D	2.900	3.100
E	4.300	4.500
b	0.190	0.300
c	0.090	0.200
E1	6.250	6.550
A		1.100
A2	0.800	1.000
A1	0.020	0.150
e	0.65(BSC)	
L	0.500	0.700
H	0.25(TYP)	
Θ	1°	7°