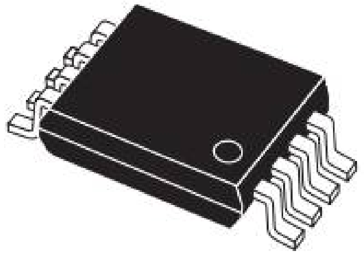
General Description

SK8205-T8 uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 2.5V. This device is suitable
for use as a Battery protection or in other Switching application.



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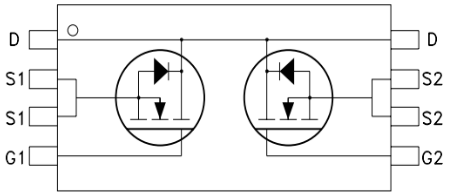
Product Summary

V_{DS}	20 V
I_D (at V_{GS}=4.5V)	6.0A
$R_{DS(ON)}$ (at V_{GS} = 4.5V)	20mΩ Typ
$R_{DS(ON)}$ (at V_{GS} = 2.5V)	26mΩ Typ



Absolute Maximum Ratings TA=25°C unless otherwise noted			
Parameter	**Symbol**	**Limit**	**Unit**
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	±12	V
Drain Current-Continuous @ T_J=25℃	I_D	6	A
Pulsed[b]	I_{DM}	20	A
Drain-Sourse Diode Forward Current[a]	I_S	2.5	A
Maximum Power Dissipation[a]	P_D	1.5	W
Operating Junction and Storage Temperature Range	T_J,T_{STG}	-55 To 150	℃

Thermal Characteristic			
Parameter	**Symbol**	**Limit**	**Unit**
Thermal Resistance,Junction-to-Ambient [a]	$R_{\theta JA}$	80	℃/W

Electrical Characteristics (TA=25℃unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ^{c}	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V I_D=250μA	20	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=20V,V_{GS}=0V	-	-	1	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS}=±12V,V_{DS}=0V	-	-	±100	nA
On Characteristics						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=250μA	0.5	0.7	1.2	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS}=4.5V, I_D=4.5A	-	20	27	mΩ
		V_{GS}=2.5V, I_D=3.5A	-	26	32	mΩ
Forward Transconductance	g_{FS}	V_{DS}=5V,I_D=7A	-	17.7	-	S
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS}=8V, V_{GS}=0V, F=1.0MHz	-	802	-	pF
Output Capacitance	C_{oss}		-	153	-	pF
Reverse Transfer Capacitance	C_{rss}		-	122	-	pF
Switching Characteristics						
Turn-on Delay Time	$t_{d(on)}$	V_{DD}=10V, I_D=1A V_{GS}=4.5V, R_{GEN}=10Ω , R_L=10Ω	-	18	-	nS
Turn-on Rise Time	t_r		-	5	-	nS
Turn-Off Delay Time	$t_{d(off)}$		-	43.8	-	nS
Turn-Off Fall Time	t_f		-	20	-	nS
Total Gate Charge	Q_g	V_{DS}=10V, I_D=4A, V_{GS}=4.5V	-	10.5	-	nC
Gate-Source Charge	Q_{gs}		-	2	-	nC
Gate-Drain Charge	Q_{gd}		-	2.5	-	nC
Drain-Source Diode Characteristics						
Diode Forward Voltage	V_{SD}	V_{GS}=0V,I_S=1.7A	-	-	1.2	V

Notes:

a. Surface Mounted on FR4 Board ,T<10 sec ;

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

c. Guaranteed by Design, not subject to production testing.

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

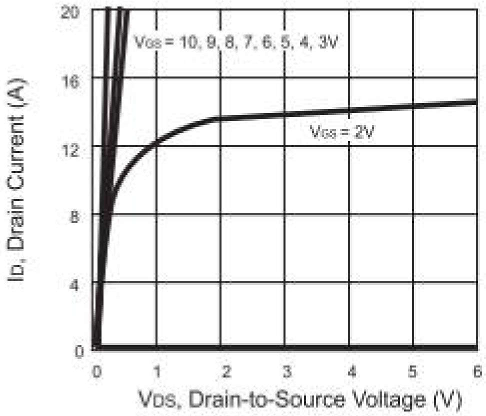


Figure 1. Output Characteristics

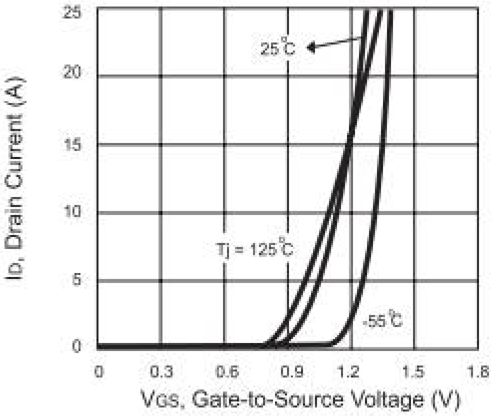


Figure 2. Thansfer Characteristics

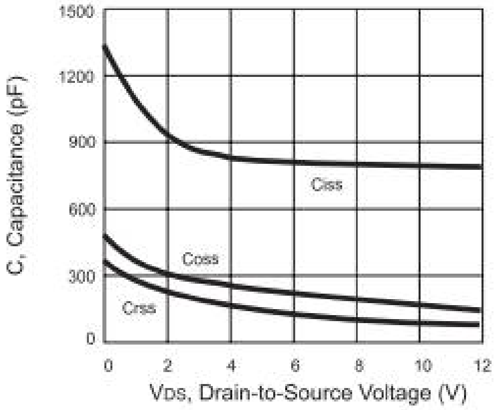


Figure 3. Capacitance

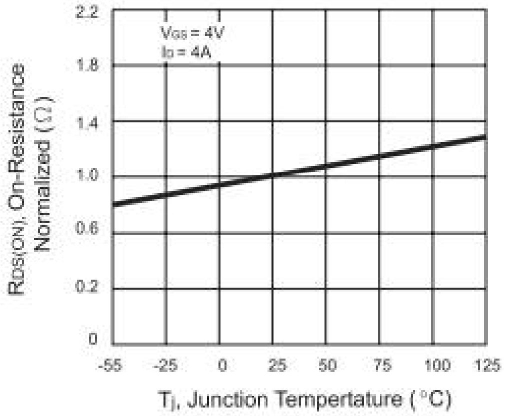


Figure 4. On-Resistance Variation with Temperature

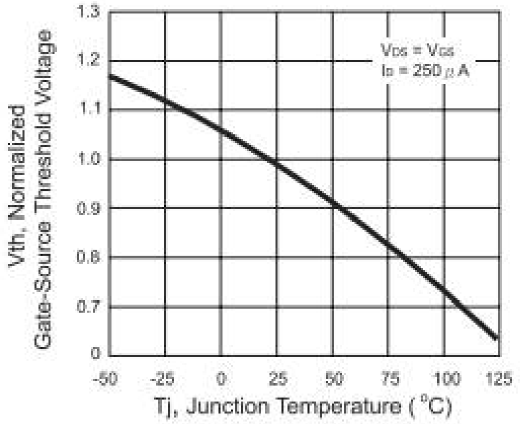


Figure 5. Gate Threshold Variation with Temperature

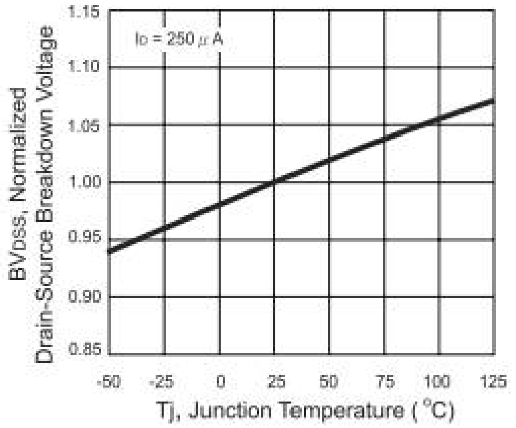


Figure 6. Breakdown Voltage Variation with Temperature

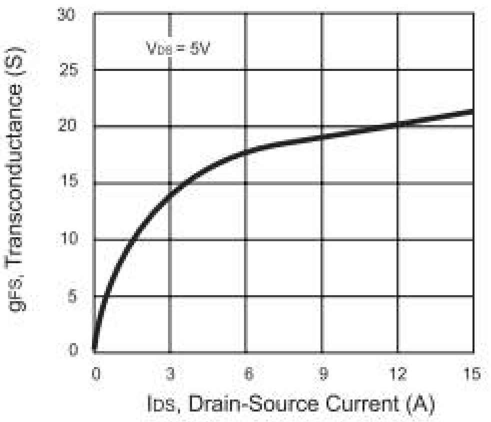


Figure 7. Transconductance Variation with Drain Current

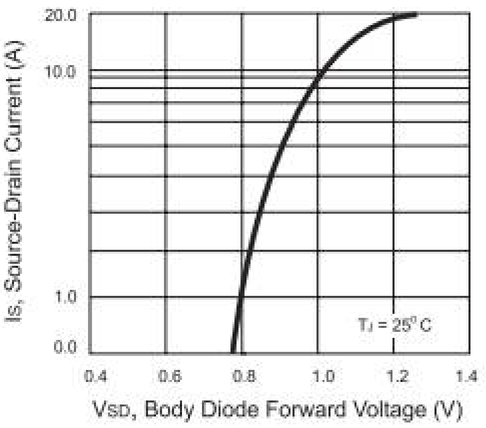


Figure 8. Body Diode Forward Voltage Variation with Source Current

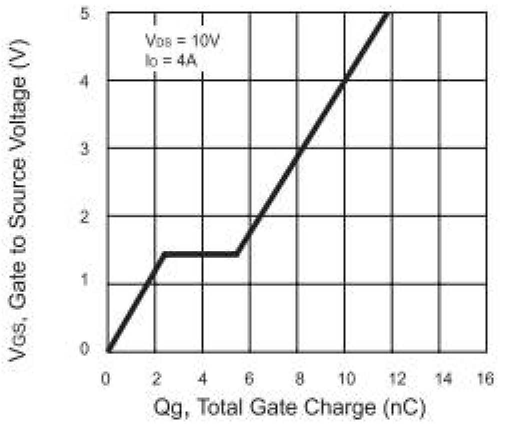


Figure 9. Gate Charge

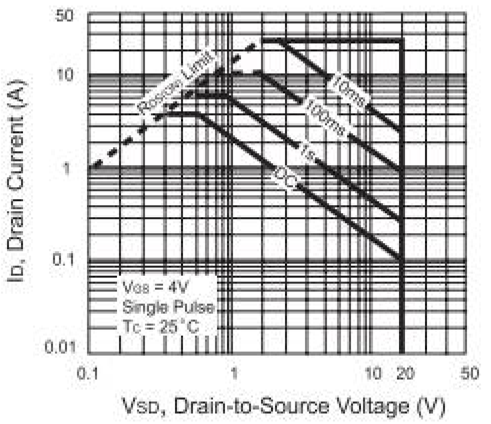
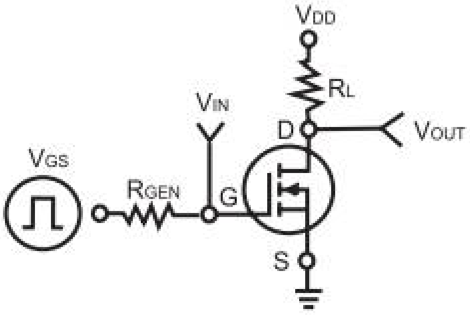


Figure 10. Maximum Safe Operating Area



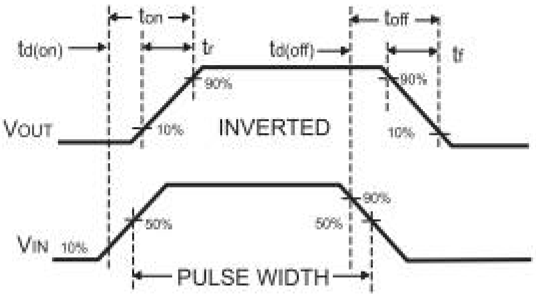


Figure 11. Switching Test Circuit

Figure 12. Switching Waveforms

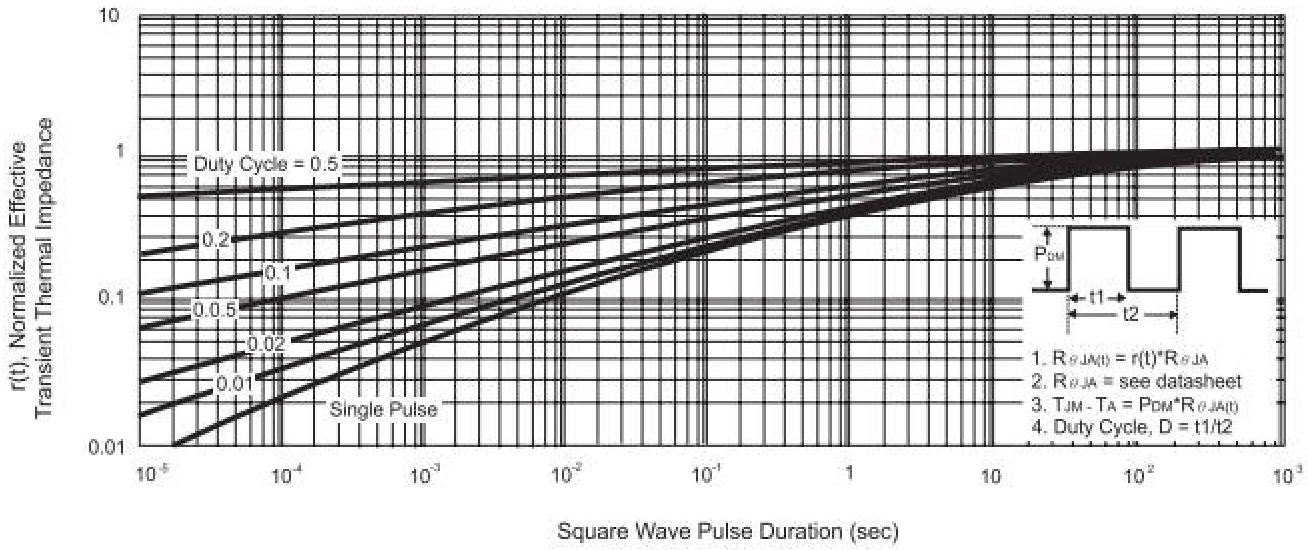


Figure 13. Normalized Thermal Transient Impedance Curve

MARKING DESCRIPSION

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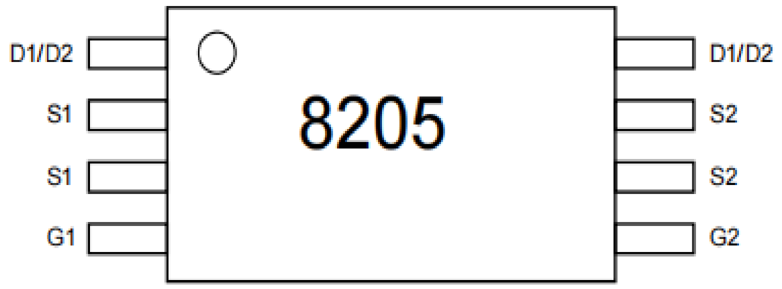

Package Outline Dimensions

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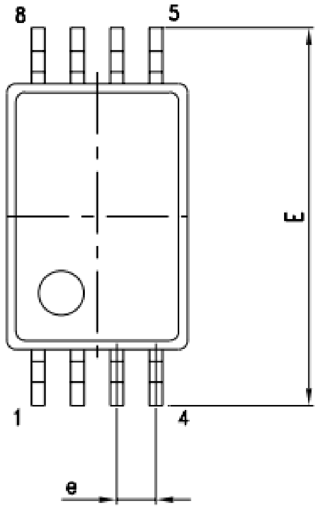

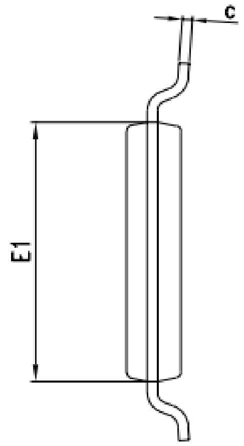

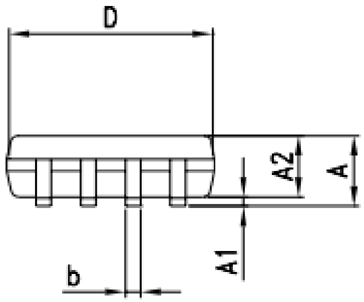

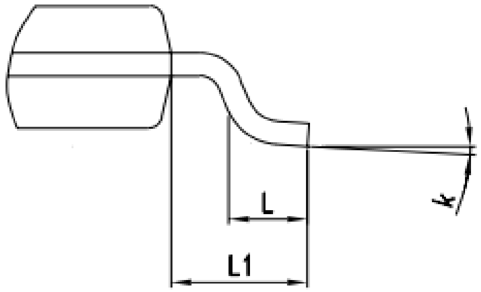

DIM.	mm.			inch.		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	1.05		1.20	0.041		0.047
A1	0.05		0.15	0.002		0.006
A2	0.80		1.05	0.032		0.041
b	0.19		0.30	0.008		0.012
c	0.090		0.20	0.003		0.007
D	2.90		3.10	0.114		0.122
E	6.20		6.60	0.240		0.260
E1	4.30		4.50	0.170		0.177
e		0.65			0.025	
L	0.45		0.75	0.018		0.030
L1		1.00			0.039	
k	0°		8°	0.192		0.208