



-100V P-Channel MOSFET

● Features

-100V/-30A ,

$R_{DS(ON)} < 58m\Omega @ V_{GS} = -10V$

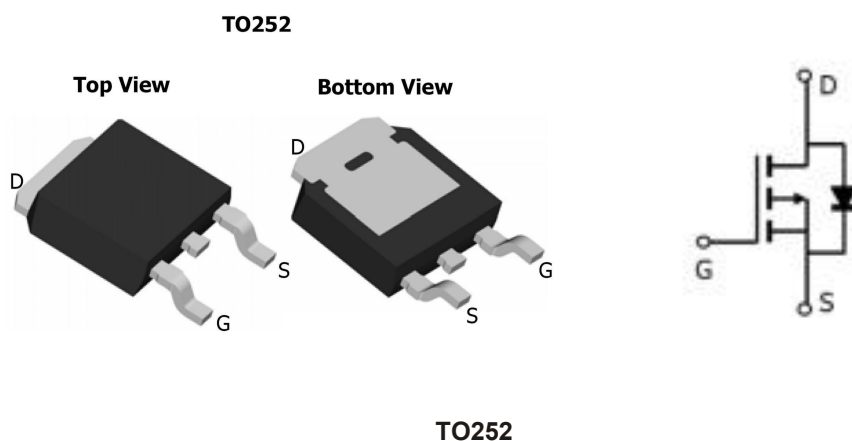
$R_{DS(ON)} < 65m\Omega @ V_{GS} = -4.5V$

Lead Free Available (RoHS Compliant)

● General Description

The FS2245B uses advanced trench technology and design to provide excellent $R_{DS(ON)}$ with low gate charge. It can be used in a wide variety of applications. It is ESD protested.

● Pin Configuration



● Absolute Maximum Ratings $T_A=25^\circ\text{C}$ unless otherwise noted

Parameter		Symbol	Maximum	Units
Drain-Source Voltage		V_{DS}	-100	V
Gate-Source Voltage		V_{GS}	± 20	
Continuous Drain Current	$T_A=25^\circ\text{C}$	I_D	-30	A
	$T_A=100^\circ\text{C}$		-21	
Pulsed Drain Current		I_{DM}	-150	
Avalanche energy $L=1\text{mH}$ note5		E_{AS}, E_{AR}	420	mJ
Maximum Power Dissipation		P_D	120	W
Derating factor			0.8	W/ $^\circ\text{C}$
Junction and Storage Temperature Range		T_J, T_{STG}	-55 to 175	$^\circ\text{C}$

Thermal Characteristics			
Parameter	Symbol	Limit	Units
Thermal Resistance, Junction-to-Case note2	$R_{\theta Jc}$	1.25	$^\circ\text{C/W}$



● **Electrical Characteristics ($T_A=25^\circ\text{C}$ unless otherwise noted)**

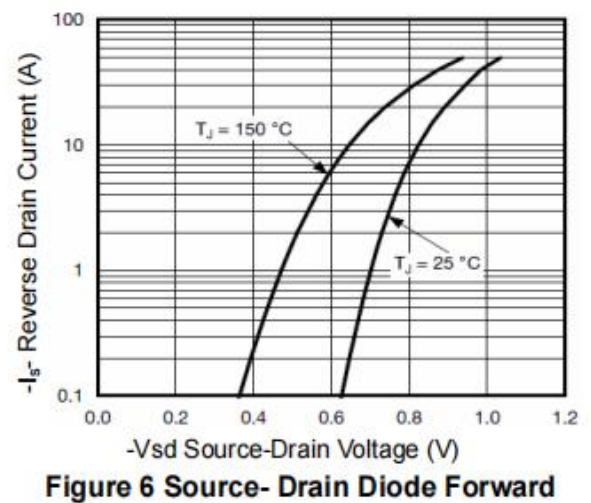
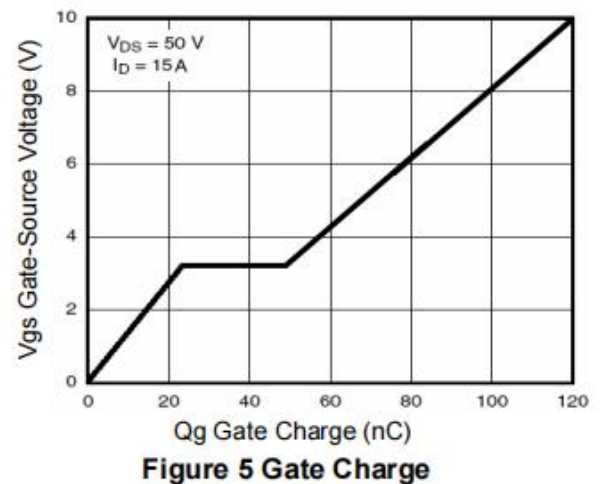
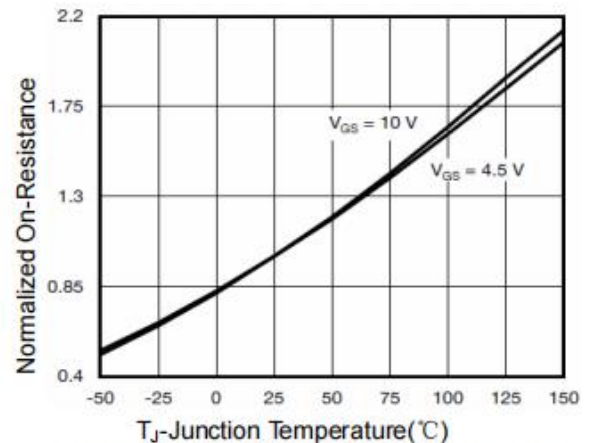
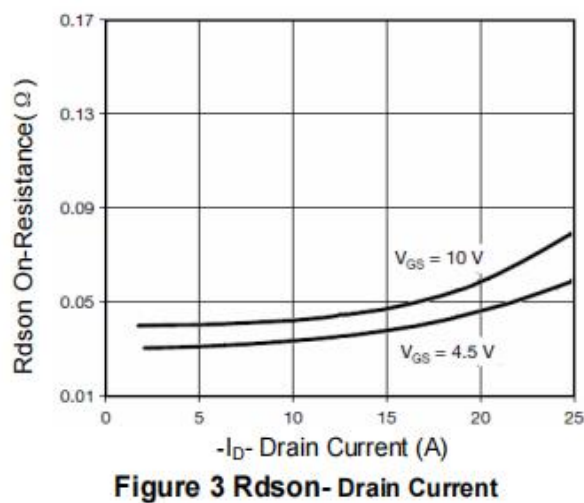
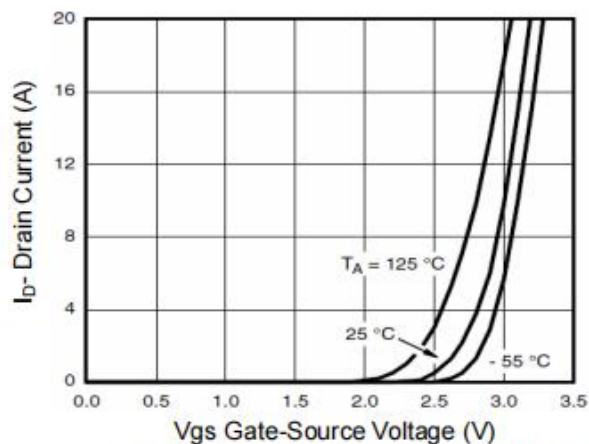
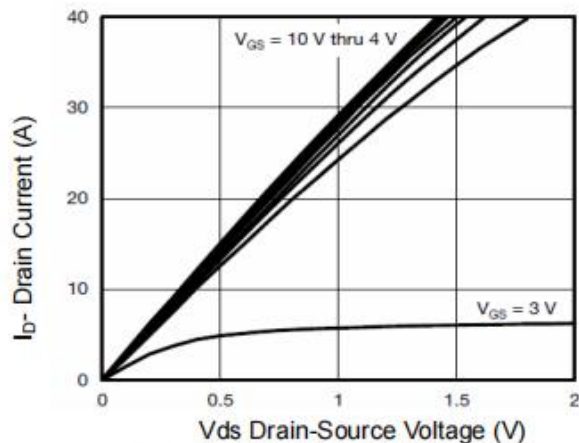
Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	I _D =-250μA, V _{GS} =0V	-100	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =-100V, V _{GS} =0	-	-	1	uA
I _{GSS}	Gate-Body leakage current	V _{DS} =0V, V _{GS} =±20V	-	-	±10	
On Characteristics ^{note3}						
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} I _D =-250μA	-1.5	-1.9	-2.5	V
R _{DS(ON)}	Static Drain-Source On-Resistance	V _{GS} =-10V, I _D =-15A	-	44	58	mΩ
		V _{GS} =-4.5V, I _D =-15A	-	48	65	
g _{FS}	Forward Trans conductance	V _{DS} =-50V, I _D =-10A	5	-	-	S
Dynamic Characteristics ^{note4}						
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =-50V, f=1MHz	-	8049	-	pF
C _{oss}	Output Capacitance		-	184.5	-	
C _{rss}	Reverse Transfer Capacitance		-	179	-	
Switching Characteristics ^{note4}						
t _{D(on)}	Turn-On Delay Time	V _{GS} =-10V, V _{DD} =-50V, I _D =-15A, R _{GEN} =9.1Ω	-	17	-	ns
t _r	Turn-On Rise Time		-	80	-	
t _{D(off)}	Turn-Off Delay Time		-	45	-	
t _f	Turn-Off Fall Time		-	65	-	
Q _g	Total Gate Charge	V _{GS} =-10V, V _{DS} =-50V, I _D =-15A		120		nC
Q _{gs}	Gate Source Charge			22		
Q _{gd}	Gate Drain Charge			26.4		
Drain-Source Diode Characteristics						
V _{SD}	Diode Forward Voltage ^{note3}	I _S =-10A,V _{GS} =0V	-	-	-1.2	V
I _S	Diode Forward Current ^{t_{note2}}		-	-	-30	A
T _{ON}	Forward Turn-On Time	Intrinsic turn-on time is negligible (turn-on is dominated by LS+LD)				
t _{rr}	Body Diode Reverse Recovery Time	TJ = 25 ° C, IF =-15A	-	90	-	ns
Q _{rr}	Body Diode Reverse Recovery Charge	di/dt = 100A/ μ s ^{note3}	-	150	-	nC

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, $t \leq 10\text{ sec}$.
3. Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$.
4. Guaranteed by design, not subject to production
5. EAS condition: $T_J=25^\circ\text{C}$, $V_{DD}=-50\text{V}$, $V_G=-10\text{V}$, $L=0.5\text{mH}$, $R_g=25\Omega$



- Typical Electrical and Thermal Characteristics (Curves)





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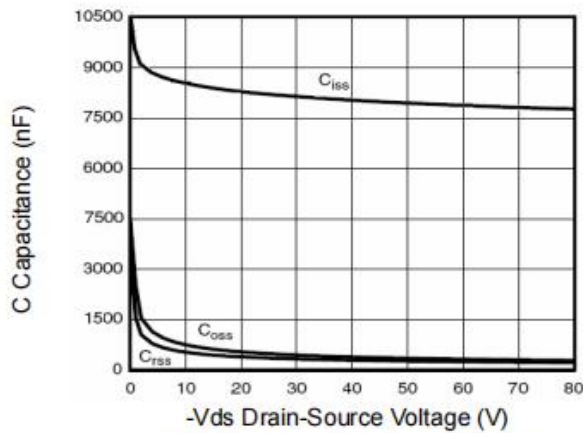


Figure 7 Capacitance vs Vds

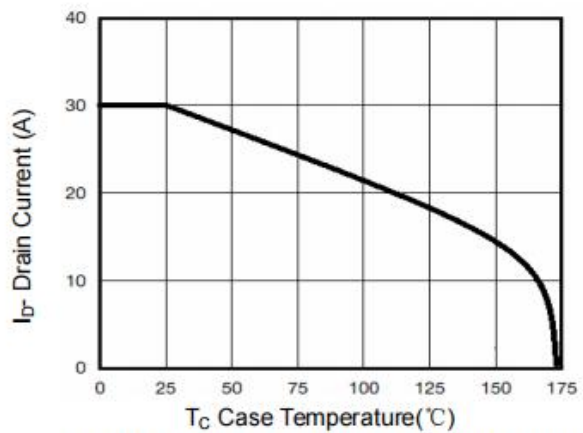


Figure 9 Drain Current vs Case Temperature

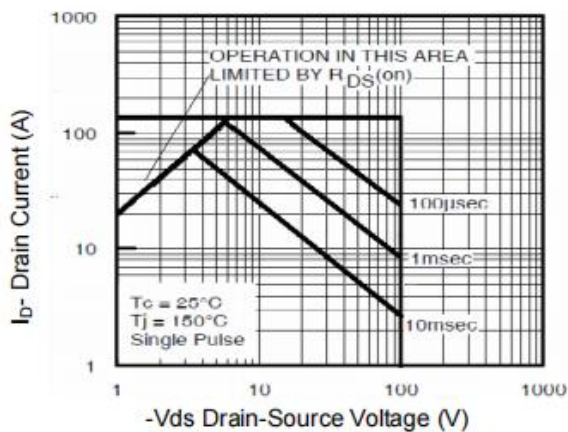


Figure 8 Safe Operation Area

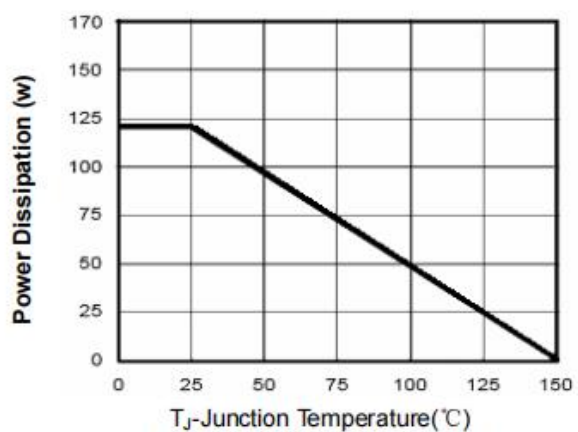


Figure 10 Power De-rating

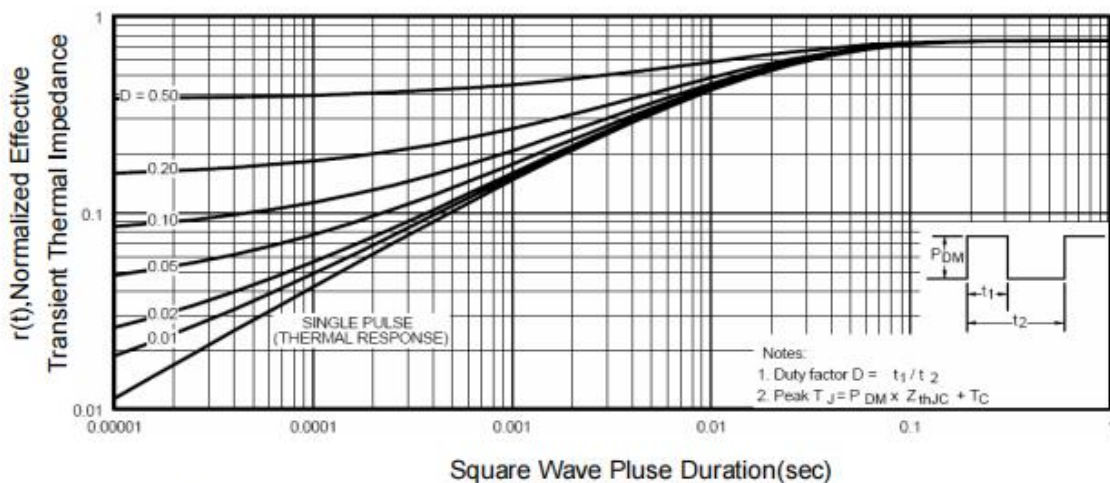
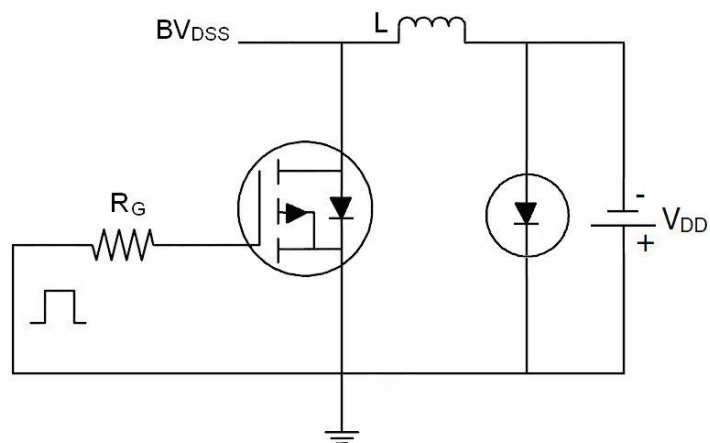


Figure 11 Normalized Maximum Transient Thermal Impedance

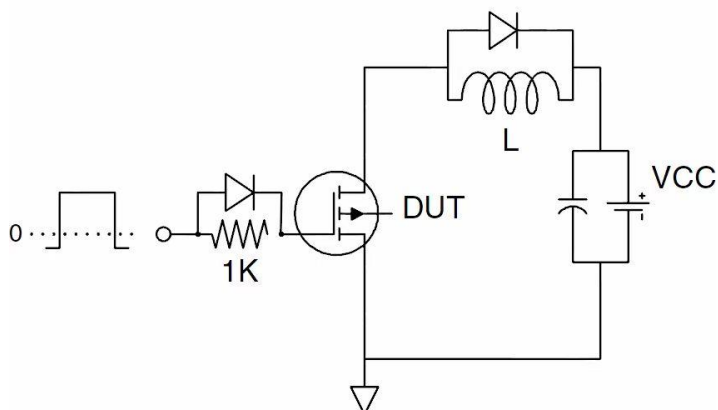


- **Test Circuit**

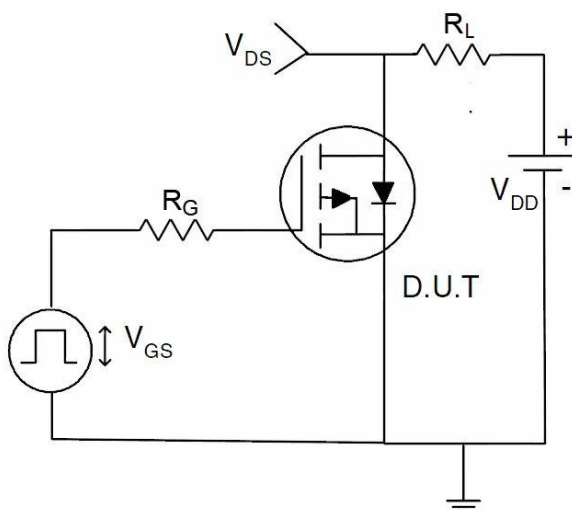
EAS Test Circuit



Gate Charge Test Circuit

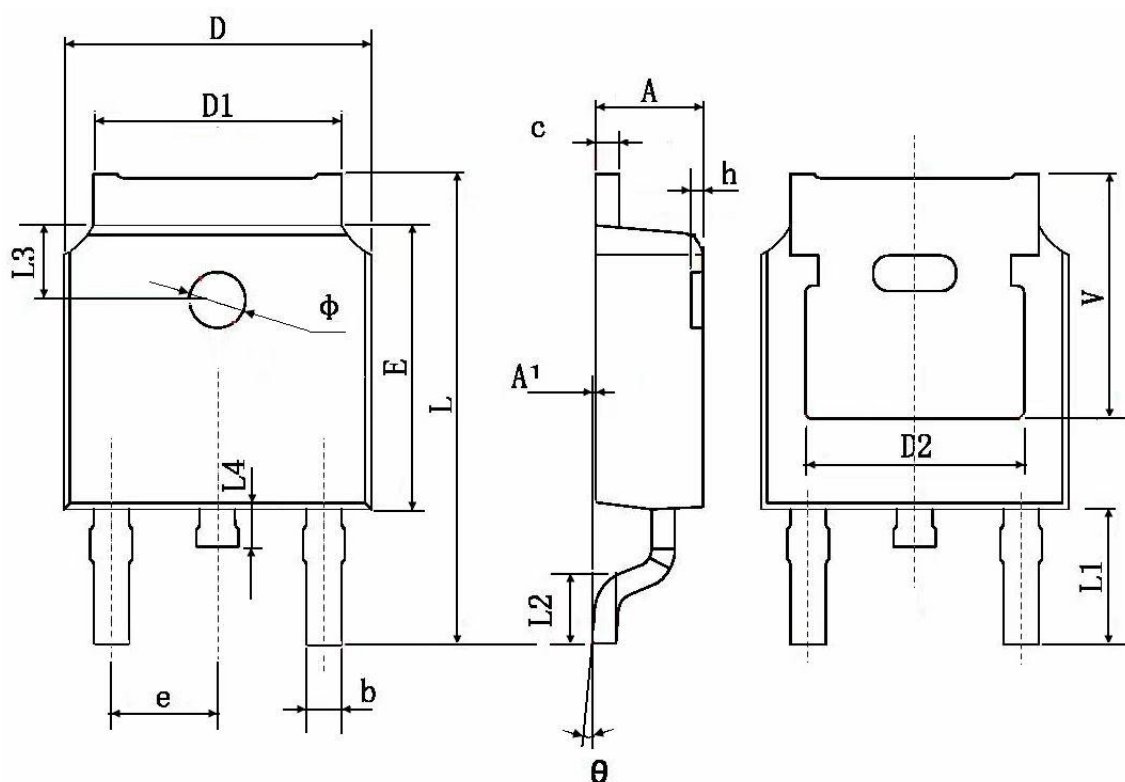


Switch Time Test Circuit





- TO-252 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
A1	0.000	0.127	0.000	0.005
b	0.660	0.860	0.026	0.034
c	0.460	0.580	0.018	0.023
D	6.500	6.700	0.256	0.264
D1	5.100	5.460	0.201	0.215
D2	4.830 TYP.		0.190 TYP.	
E	6.000	6.200	0.236	0.244
e	2.186	2.386	0.086	0.094
L	9.800	10.400	0.386	0.409
L1	2.900 TYP.		0.114 TYP.	
L2	1.400	1.700	0.055	0.067
L3	1.600 TYP.		0.063 TYP.	
L4	0.600	1.000	0.024	0.039
ϕ	1.100	1.300	0.043	0.051
θ	0°	8°	0°	8°
h	0.000	0.300	0.000	0.012
V	5.350 TYP.		0.211 TYP.	