★ Green Device Available
★ Super Low Gate Charge
★ Excellent CdV/dt effect decline
★ Advanced high cell density Trench technology
★ 100% EAS Guaranteed

Product Summary

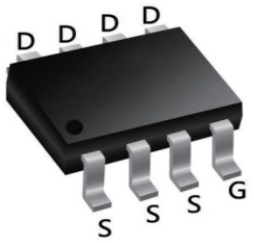
RoHS

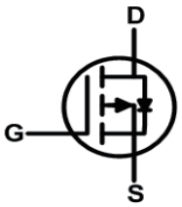
BVDSS	RDSON	ID
-40V	14mΩ	-13A

Description

The 4485 is the high cell density trenched P-ch MOSFETs, which provides excellent RDSON and efficiency for m ost of the small power switching and load switch applications. The 4485 meets the RoHS and Green Product requirement 100% EAS Guaranteed with full function reliability approved.

SOP8 Pin Configuration





Absolute Maximum Ratings

Symbol	Parameter		Max.	Units
V_{DSS}	Drain-Source Voltage		-40	V
V_{GSS}	Gate-Source Voltage		±20	V
I_D	Continuous Drain Current	TC = 25°C	-13	A
		TC = 100°C	-8.5	A
I_{DM}	Pulsed Drain Current note1		-52	A
EAS	Single Pulsed Avalanche Energy note2		80	mJ
P_D	Power Dissipation	TC = 25°C	3	W
T_J, T_{STG}	Operating and Storage Temperature Range		-55 to +175	℃

Thermal Data

Symbol	Parameter	Max.	Units
$R_{\theta JA}$	Thermal Resistance from Junction-to-Ambient 3	1.9	℃/W

Electrical Characteristics (T_J =25 °C unless otherwise specified)

Symbol	Parameter		Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics							
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage		V_{GS} = 0V, I_D = -250μA	-40	-	-	V
I_{GSS}	Gate-body Leakage current		V_{DS} = 0V, V_{GS} = ±20V	-	-	±100	nA
I_{DSS}	Zero Gate Voltage Drain Current	T_J=25°C	V_{DS} = -40V, V_{GS} = 0V	-	-	-1	μA
		TJ=100°C				-100	
$V_{GS(th)}$	Gate-Threshold Voltage		V_{DS} = V_{GS}, I_D = -250μA	-1	-1.5	-2.2	V
$R_{DS(on)}$	Drain-Source On-Resistance[4]		V_{GS} = -10V, I_D = -10A	-	14	19	mΩ
			V_{GS} = -4.5V, I_D = -5 A	-	19.5	25	
g_{fs}	Forward Transconductance [4]		V_{DS} = -10V, I_D = -10A	-	44	-	S
Dynamic Characteristics[5]							
C_{iss}	Input Capacitance		V_{DS} = -20V, V_{GS} =0V, f =1MHz	-	2525	-	pF
C_{oss}	Output Capacitance			-	190	-	
C_{rss}	Reverse Transfer Capacitance			-	172	-	
R_g	Gate Resistance		f =1MHz	-	10	-	Ω
Switching Characteristics [5]							
Q_g	Total Gate Charge		V_{GS} = -10V,V_{DS} = -20V, I_D= -10A	-	35	-	nC
Q_{gs}	Gate-Source Charge			-	5.5	-	
Q_{gd}	Gate-Drain Charge			-	8	-	
$t_{d(on)}$	Turn-On Delay Time		V_{GS} = -10V, V_{DD} = -20V, R_G = 3Ω, I_D= -10A	-	14.5	-	ns
t_r	Rise Time			-	20.2	-	
$t_{d(off)}$	Turn-Off Delay Time			-	32	-	
t_f	Fall Time			-	10	-	
Drain-Source Body Diode Characteristics							
V_{SD}	Diode Forward Voltage[4]		I_S = -10A, V_{GS} = 0V	-	-	-1.2	V
I_S	Continuous Source Current	T_C=25°C	-	-	-	-13	A

Notes:
1. Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}$=150°C.
2. The EAS data shows Max. rating . The test condition is V_{DD}= -25V, V_{GS}= -10V, L= 0.1mH, I_{AS}= -34A.
3. The data tested by surface mounted on a 1 inch2 FR-4 board with 2OZ copper, The value in any given application depends on the user's specific board design.
4. The data tested by pulsed , pulse width ≤ 300us , duty cycle ≤ 2%.
5. This value is guaranteed by design hence it is not included in the production test.

Typical Electrical and Thermal Characteristics (Curves)

Figure1: Output Characteristics

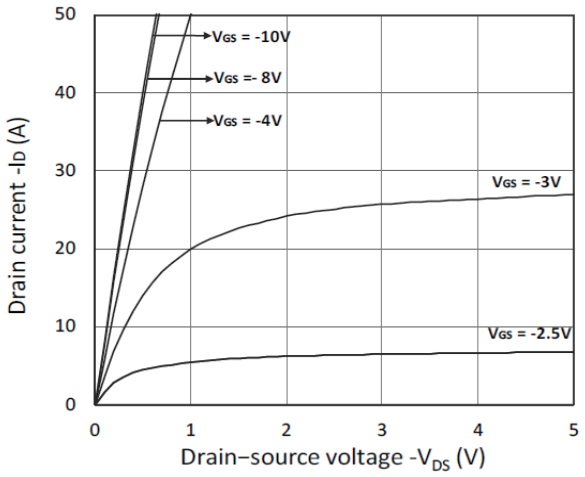


Figure 2: Typical Transfer Characteristics

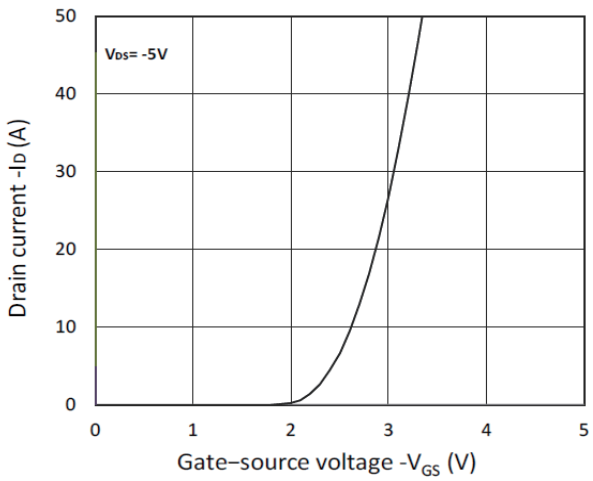


Figure 3:Forward Characteristics of Rev

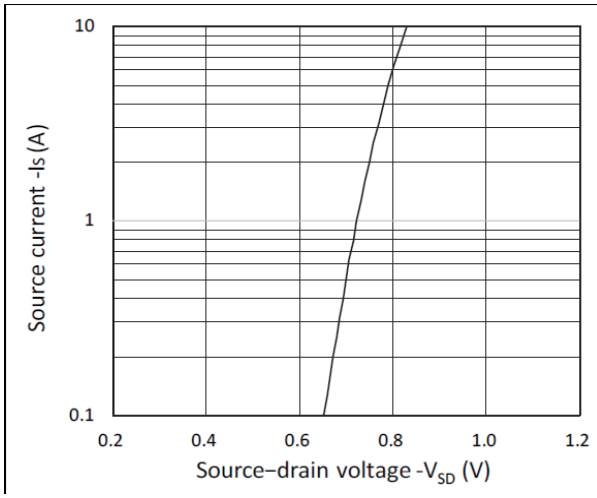


Figure 4: RDS(ON) vs. VGS

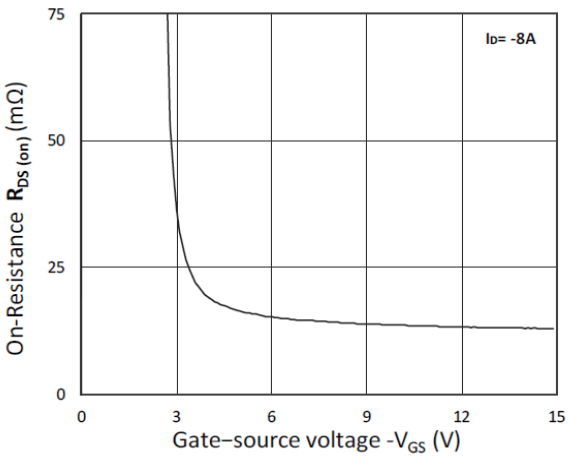


Figure 5: RDS(ON) vs. ID

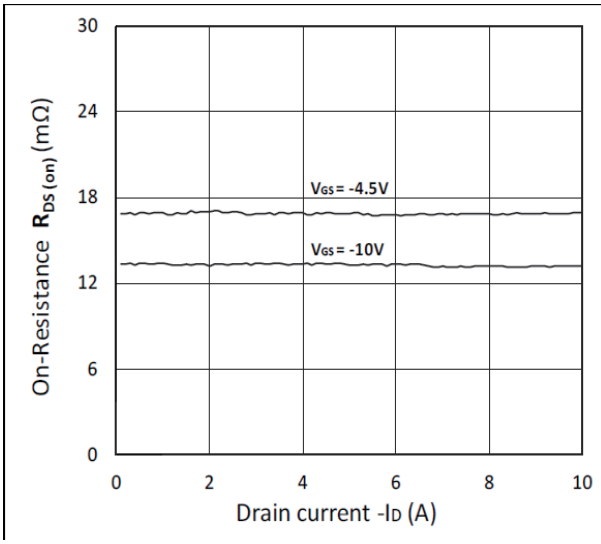
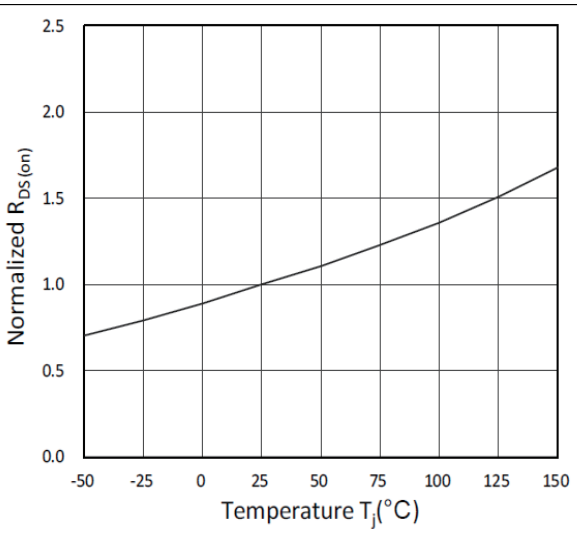


Figure 6:Normalized RDS(on) vs. Tempe



Typical Performance Characteristics

Figure 7:Capacitance Characteristics

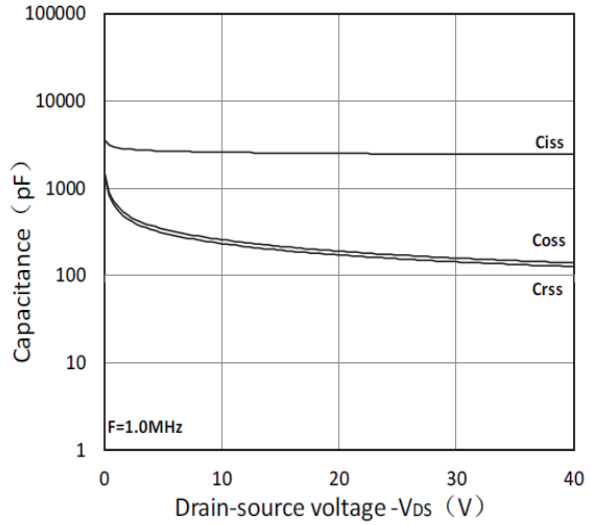


Figure 8: Gate Charge Characteristics

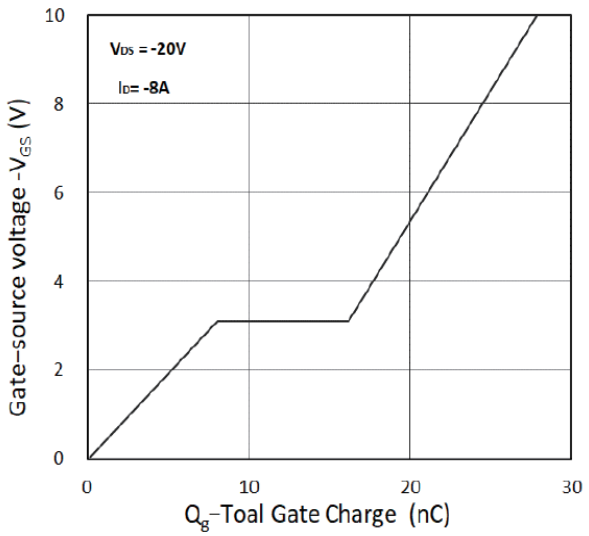


Figure 9: Power Dissipation

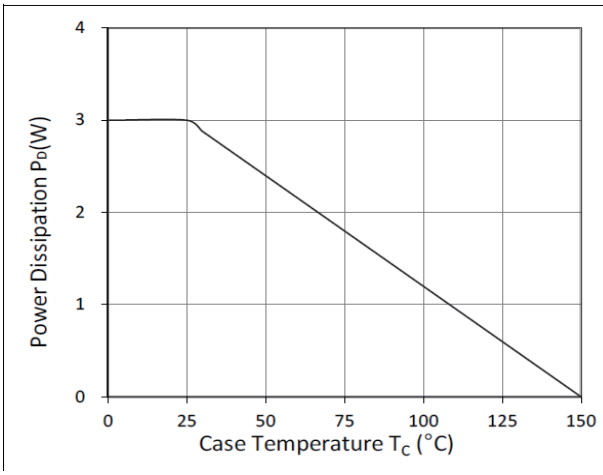


Figure 10: Safe Operating Area

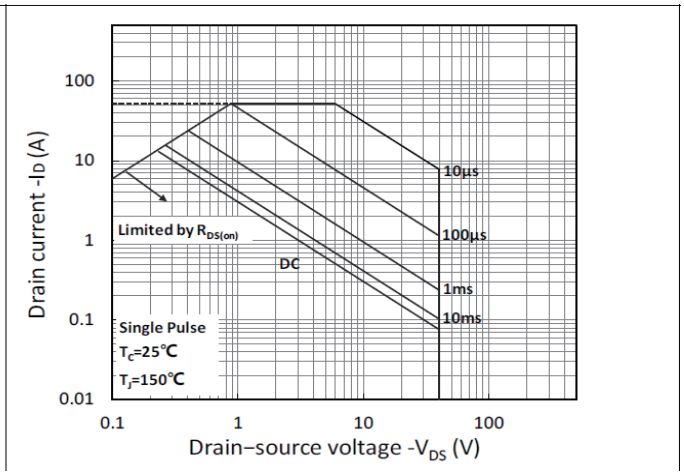
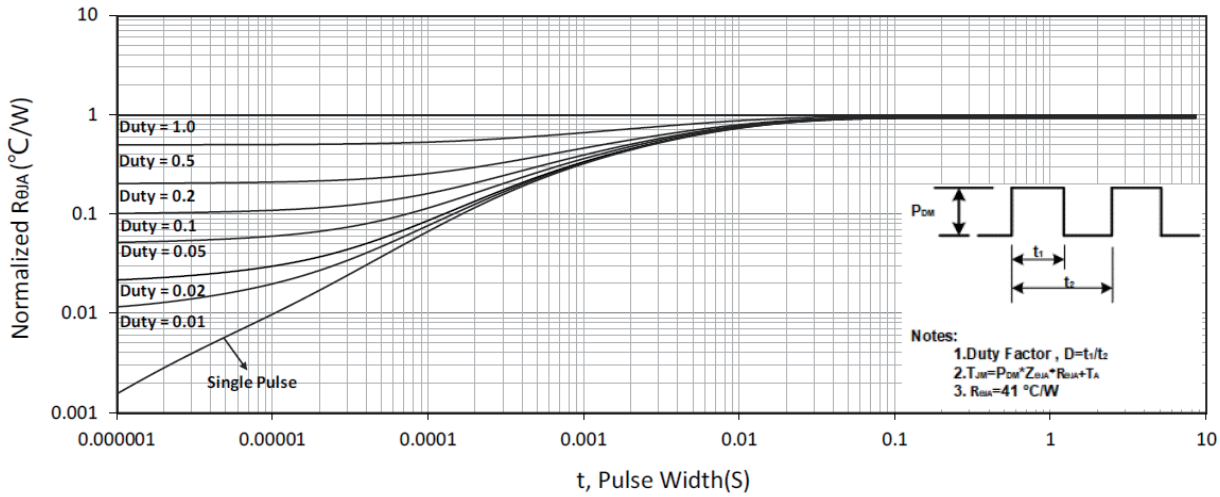


Figure 11:Normalized Maximum Transie



Test Circuit

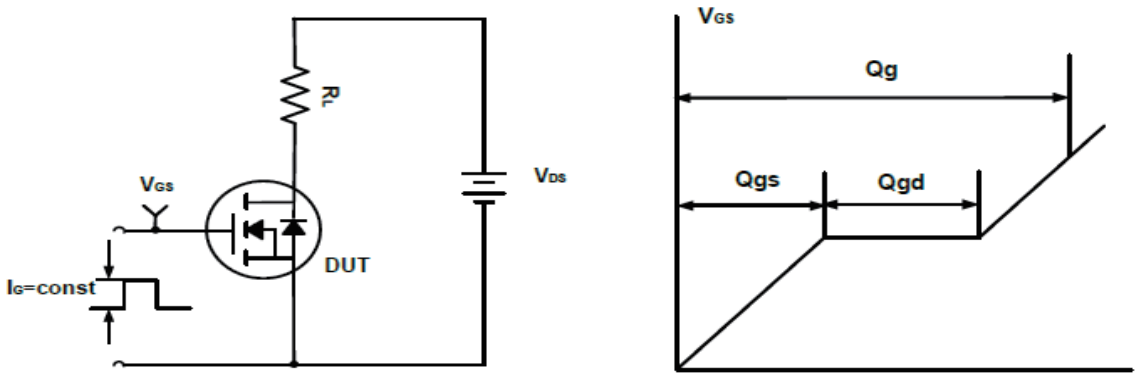


Figure A. Gate Charge Test Circuit & Waveforms

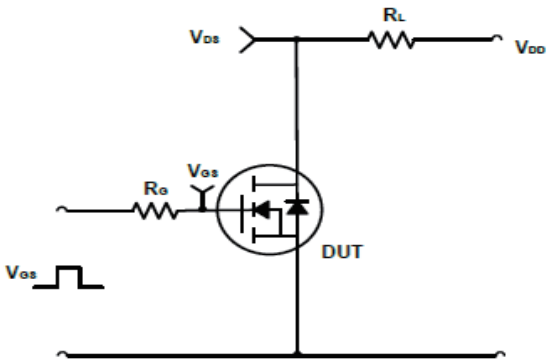


Figure B. Switching Test Circuit & Waveforms

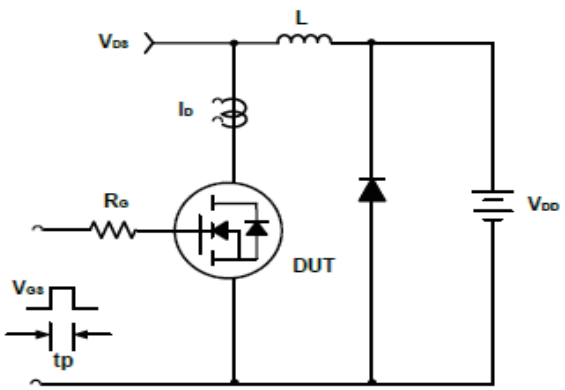
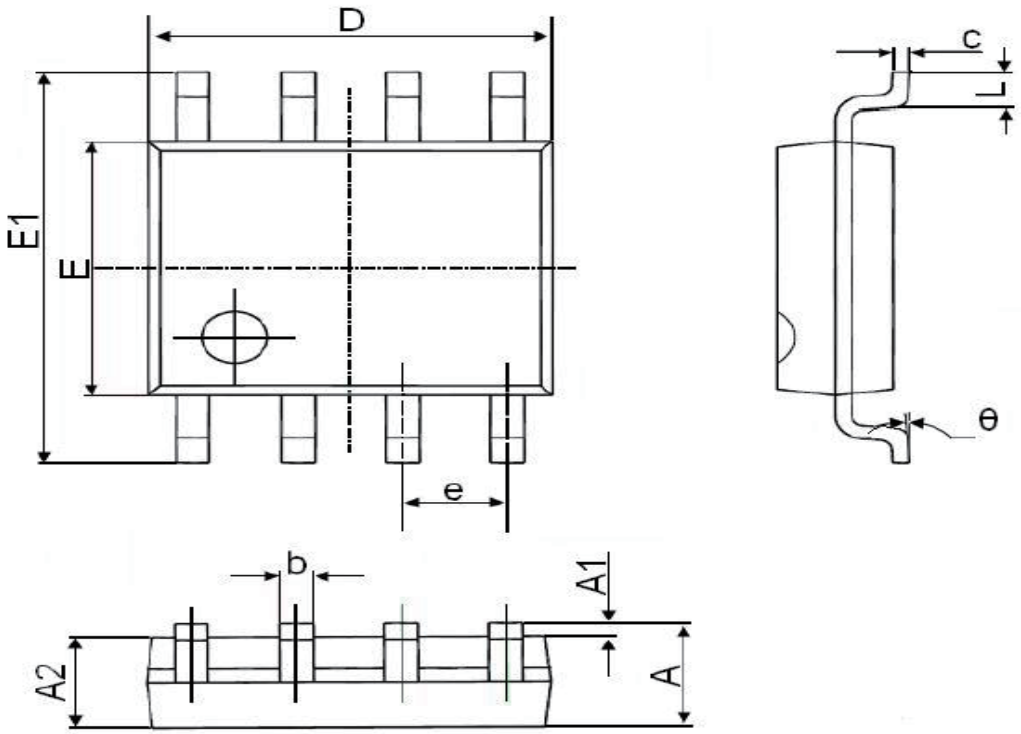


Figure C. Unclamped Inductive Switching Circuit & Waveforms

SOP-8 Package Information



DIMENSIONS (unit : mm)

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.35	1.75	0.053	0.069
A1	0.1	0.25	0.004	0.01
A2	1.35	1.55	0.053	0.061
b	0.33	0.51	0.013	0.02
c	0.17	0.25	0.006	0.01
D	4.7	5.1	0.185	0.2
E	3.8	4	0.15	0.157
E1	5.8	6.2	0.228	0.244
e	1.270(BSC)		0.050(BSC)	
L	0.4	1.27	0.016	0.05
θ	0°	8°	0°	8°