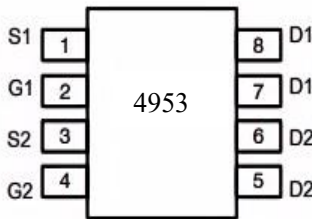


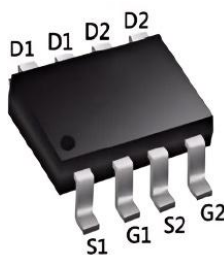
Features ➤ Super Low Gate Charge ➤ Green Device Available ➤ Excellent CdV/dt effect decline ➤ Advanced high cell density Trench technology	Bvdss	Rdson	ID
	-20V	55mΩ	-5A
	Application ➤ Battery Switch ➤ Load switch ➤ Power management		



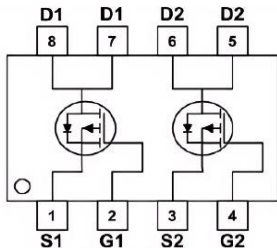
| **Package** | | | |



Marking and pin assignment



SOP-8 Top view



Schematic diagram

Package Marking and Ordering Information

Device Marking	Device	Device Package	Quantity
4953	4953B	SOP-8	3000

Absolute Maximum Ratings (T_C=25°C unless otherwise specified)

Parameter		Symbol	Max.	Unit
Drain-Source Voltage		V _{DS}	-20	V
Gate-Source Voltage		V _{GS}	± 12	V
Continuous Drain Current, V _{GS} @-10V ¹	T _C = 25°C	I _D	-5	A
	T _C = 100°C		-3	A
Pulsed Drain Current ²		I _{DM}	-20	A
Single Pulse Avalanche Energy		EAS	-	mJ
Total Power Dissipation ³	T _C = 25°C	P _D	2	W
Storage Temperature Range		T _{STG}	-55 ~ 150	°C
Operating Junction Temperature Rang		T _J	-55 ~ 150	°C

Thermal Resistance Ratings

Parameter	Symbol	Value	Unit
Thermal Resistance Junction-ambient ¹	R _{θJA}	85	°C/W
Thermal Resistance Junction-Case ¹	R _{θJC}	36	°C/W



Ordering Information

Ordering Number	Package	Pin Assignment						Packing
Halogen Free		G1	G2	D1	D2	S1	S2	
HL4953B	SOP-8	2	4	7,8	5,6	1	3	Tape Reel

Electrical Characteristics (Tj=25°C unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Drain- Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=-250\mu A$	-20	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=-20V, V_{GS}=0V$	-	-	-1	μA
Gate to Body Leakage Current	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 12V$	-	-	± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D=-250\mu A$	-0.5	-0.7	-1	V
Static Drain-Source On-Resistance ²	$R_{DS(on)}$	$V_{GS}=-4.5V, I_D=-3A$	-	55	70	m Ω
		$V_{GS}=-2.5V, I_D=-2A$	-	70	100	
Input Capacitance	C_{iss}	$V_{DS}=-10V, V_{GS}=0V,$ $f=1MHz$	-	503	-	pF
Output Capacitance	C_{oss}		-	67	-	
Reverse Transfer Capacitance	C_{rss}		-	58	-	
Total Gate Charge	Q_g	$V_{DS}=-10V, I_D=-2A,$ $V_{GS}=-4.5V$	-	4.1	-	nC
Gate-Source Charge	Q_{gs}		-	0.8	-	
Gate-Drain("Miller") Charge	Q_{gd}		-	1.1	-	
Turn-on Delay Time	$t_{d(on)}$	$V_{DD}=-10V, I_D=-3A,$ $R_G=1\Omega, V_G=-4.5V,$ $R_L=1.2\Omega$	-	11	-	ns
Turn-on Rise Time	t_r		-	52	-	
Turn-off Delay Time	$t_{d(off)}$		-	16	-	
Turn-off Fall Time	t_f		-	10	-	
Maximum Continuous Drain to Source Diode Forward Current	I_S	-	-	-	-5	A
Maximum Pulsed Drain to Source Diode Forward Current	I_{SM}	-	-	-	-12	A
Drain to Source Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=-3A$	-	-	-1.2	V

Notes:

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
2. Pulse Test: Pulse Width $\leq 300 \mu s$, Duty Cycle $\leq 2\%$

Typical Performance Characteristics

P-Channel Typical Characteristics

Figure 1: Output Characteristics

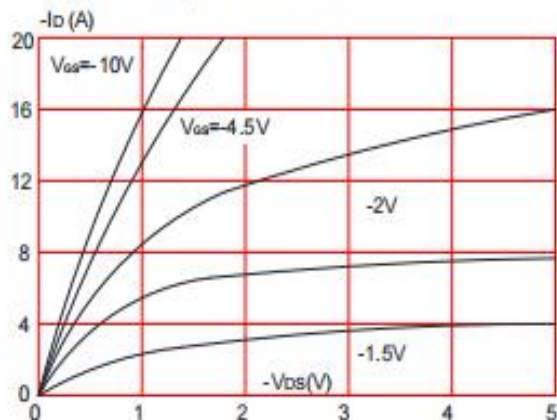


Figure 2: Typical Transfer Characteristics

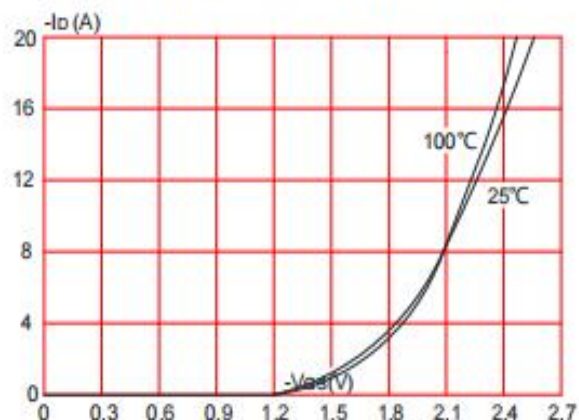


Figure 3: On-resistance vs. Drain Current

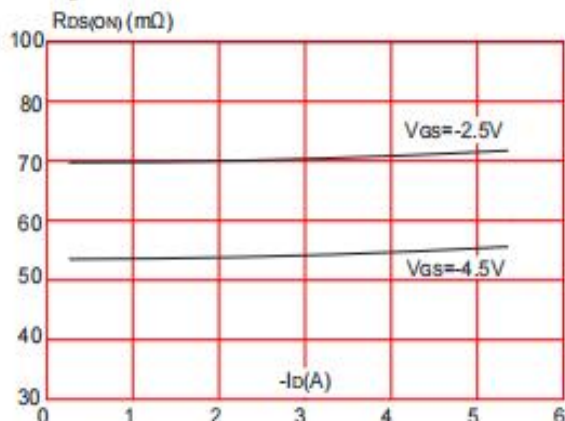


Figure 4: Body Diode Characteristics

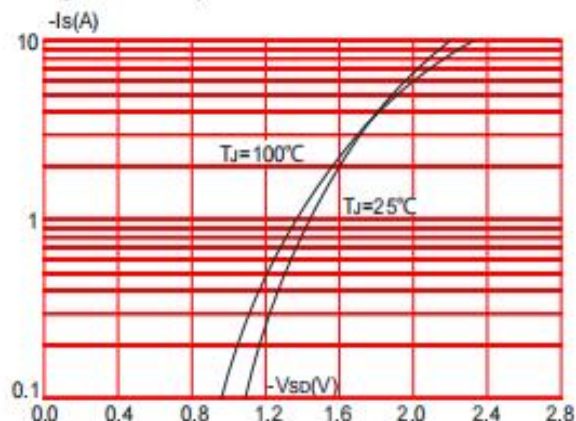


Figure 5: Gate Charge Characteristics

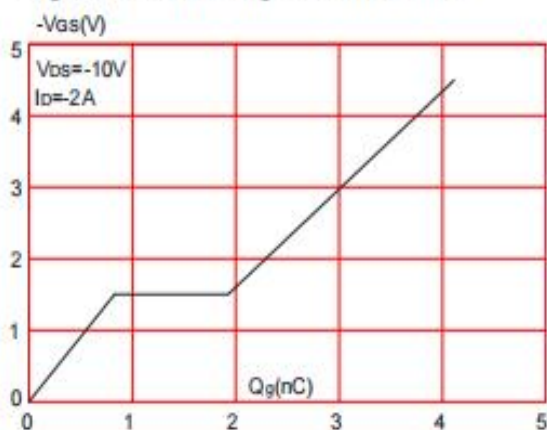
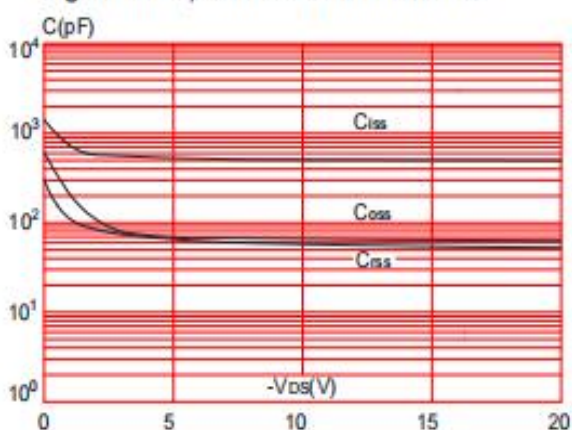
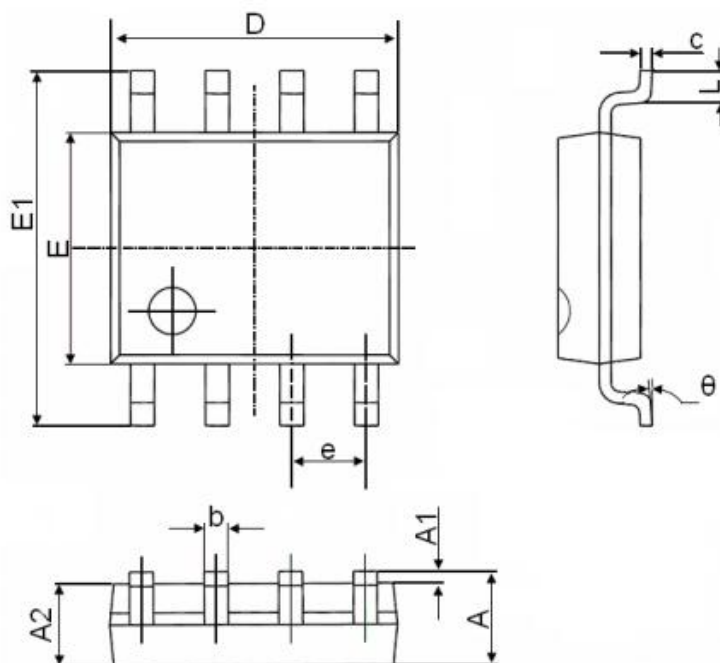


Figure 6: Capacitance Characteristics



Package Dimensions SOP-8



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.006	0.010
D	4.700	5.100	0.185	0.200
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.270(BSC)		0.050(BSC)	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°



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