

SOP-8 Plastic-Encapsulate MOSFETS

Features

- $V_{DS}=-30V$
- $I_D=-5.1A$
- $R_{DS(on)}@V_{GS}=-10V < 55m\Omega$
- $R_{DS(on)}@V_{GS}=-4.5V < 90m\Omega$
- Low Gate Charge and $R_{ds(on)}$
- Advanced high cell density Trench technology
- Improved dv/dt capability, high ruggedness

Drain-source Voltage
-30 V
Drain Current
-5.1Ampere

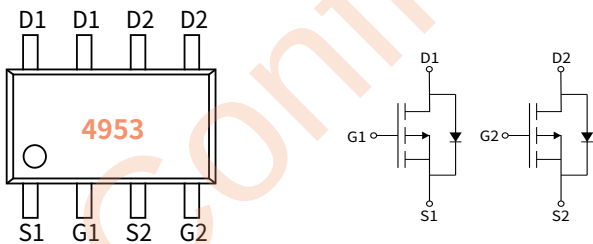
Applications

- Load switch
- Battery protection applications

Mechanical Data

- Case: SOP-8
Molding compound meets UL 94V-0 flammability rating, RoHS-compliant,halogen-free
- Terminals: Solder plated, solderable per MIL-STD-750,Method 2026

Function Diagram



Ordering Information

PACKAGE	PACKAGE CODE	UNIT WEIGHT(g)	REEL(pcs)	BOX(pcs)	CARTON(pcs)	DELIVERY MODE
SOP-8	R3	0.077	4000	12000	48000	13"

Maximum Ratings (Ta=25°C Unless otherwise specified)

PARAMETER	SYMBOL	UNIT	VALUE
Drain-source Voltage	V_{DS}	V	-30
Gate-source Voltage	V_{GS}	V	± 20
Drain Current	I_D	A	-5.1
Pulsed Drain Current ⁽¹⁾	I_{DM}	A	-20.4
Total Power Dissipation	P_D	W	2.15
Junction temperature	T_J	°C	-55 ~+150
Storage temperature	T_{stg}	°C	-55 ~+150
Thermal Resistance Junction-to-Ambient	$R_{\theta JA}$	°C / W	58



● Static Parameter Characteristics (Tj=25°C Unless otherwise specified)

PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=-250\mu A$	V	-30	—	—
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=-30V, V_{GS}=0V$	μA	—	—	-1.0
Gate-Body Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	nA	—	—	± 100
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	V	-1.0	-1.6	-2.5
Static Drain-Source On-Resistance ⁽²⁾	$R_{DS(on)}$	$V_{GS}=-10V, I_D=-5A$	m Ω	—	43	55
		$V_{GS}=-4.5V, I_D=-4A$		—	66	90

● Dynamic Parameters

PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Input Capacitance	C_{iss}	$V_{DS}=-15V, V_{GS}=0V, f=1MHz$	pF	—	580	—
Output Capacitance	C_{oss}			—	98	—
Reverse Transfer Capacitance	C_{rss}			—	74	—

● Switching Parameters

PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Turn-on Delay Time	$t_{D(on)}$	$V_{GS}=-10V, V_{DD}=-15V, I_D=-1A, R_{GEN}=2.5\Omega$	nS	—	14	—
Turn-on Rise Time	t_r		nS	—	61	—
Turn-off Delay Time	$t_{D(off)}$		nS	—	19	—
Turn-off fall Time	t_f		nS	—	10	—
Total Gate Charge	Q_g	$V_{DS}=-15V, I_D=-5.1A, V_{GS}=-10V$	nC	—	6.8	—
Gate-Source Charge	Q_{gs}		nC	—	1	—
Gate-Drain Charge	Q_{gd}		nC	—	1.4	—

● Drian-Source Diode Characteristics

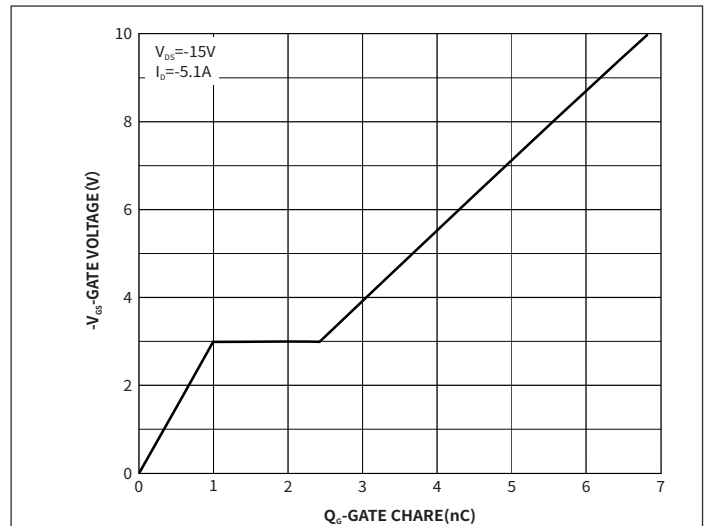
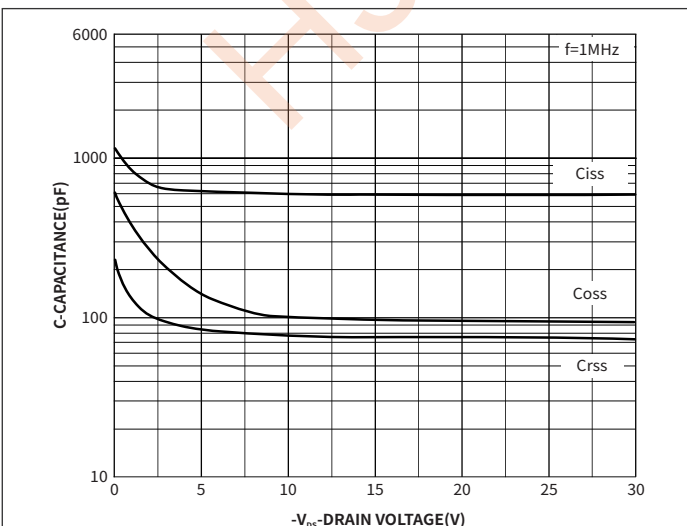
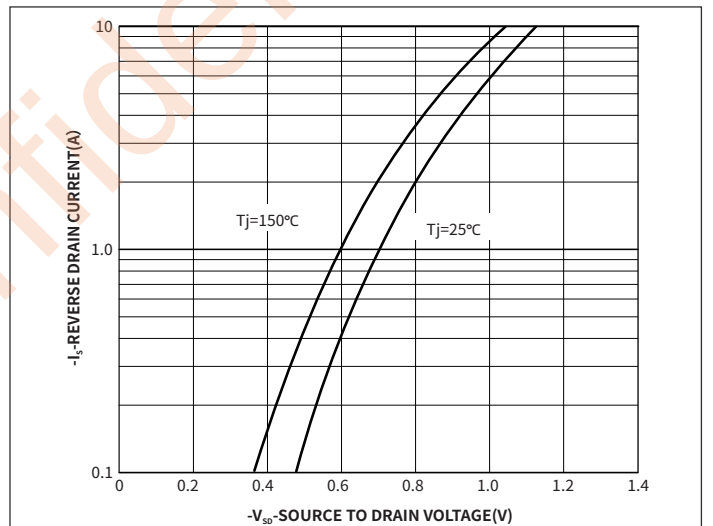
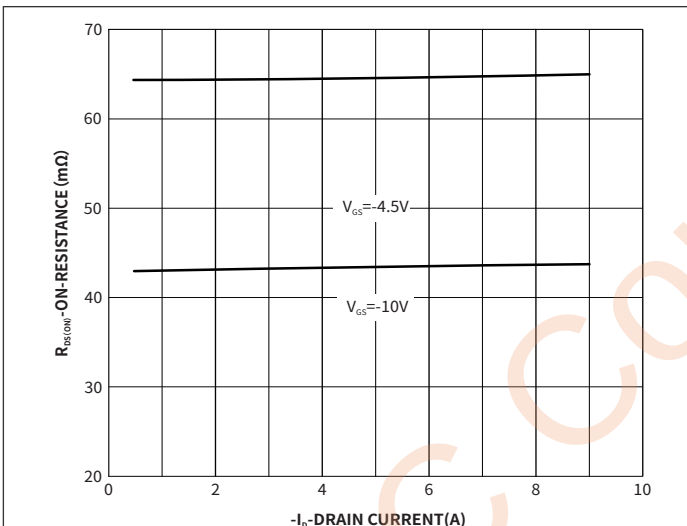
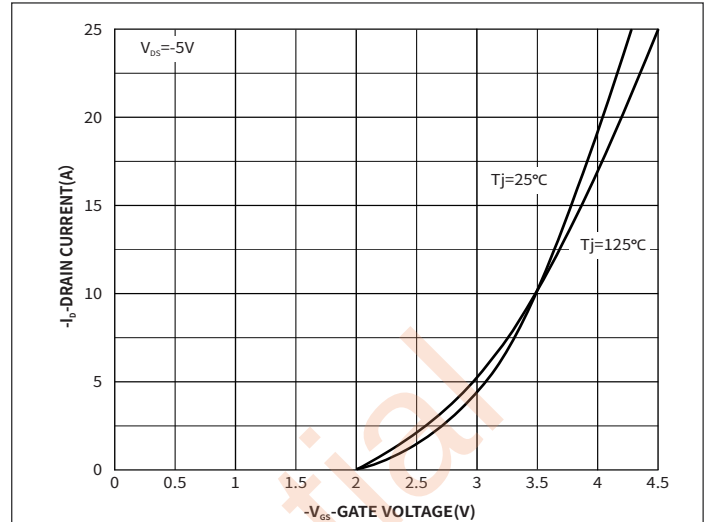
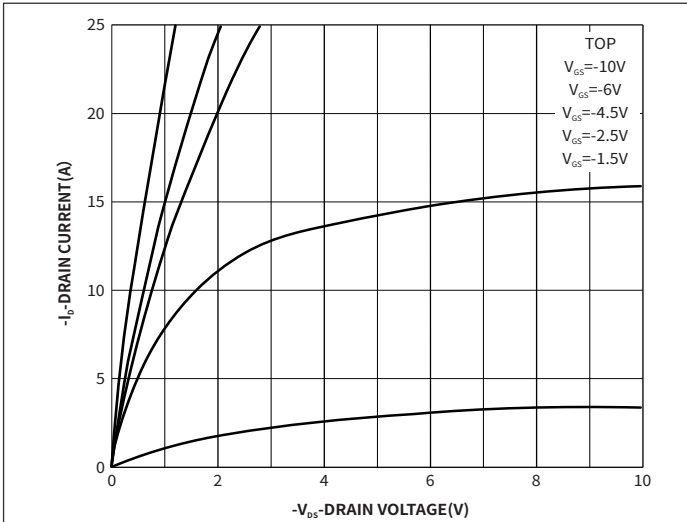
PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Diode Forward Voltage	V_{SD}	$I_S=-5.1A, V_{GS}=0V$	V	—	—	-1.2
Maximum Body-Diode Continuous Current	I_S	—	A	—	—	-5.1

Note :

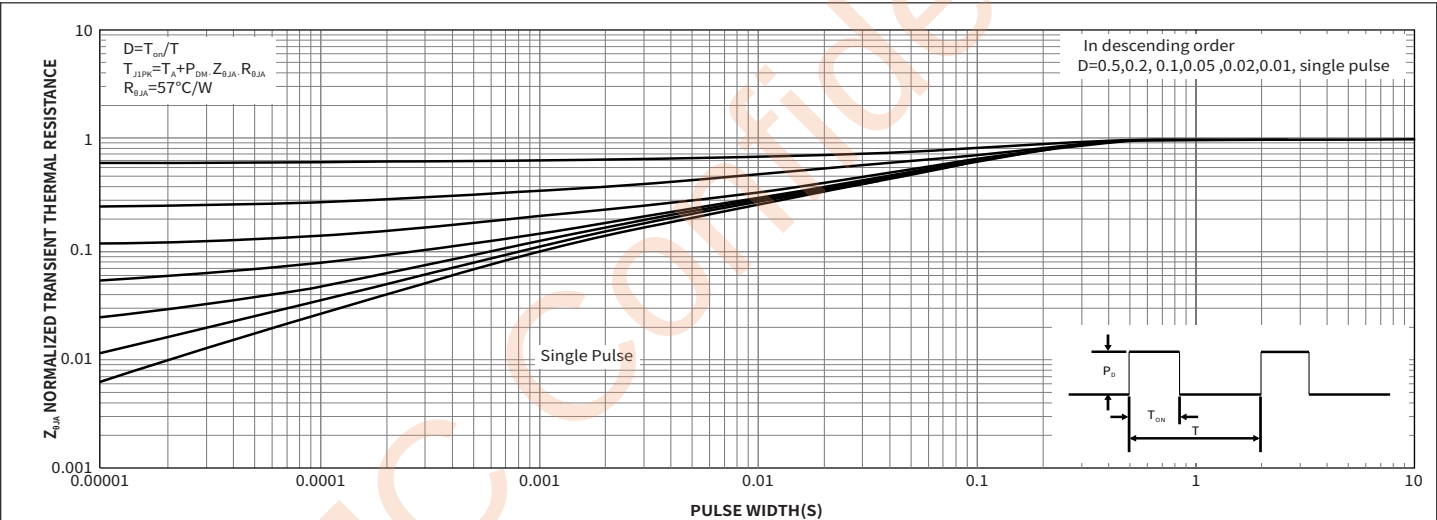
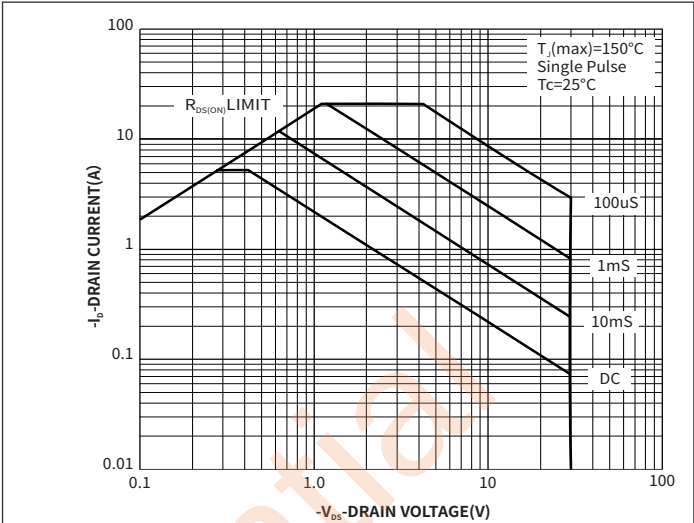
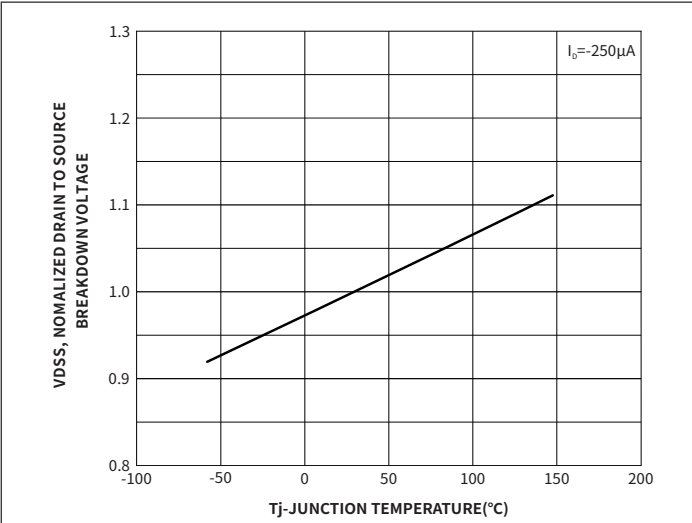
(1) Repetitive Rating: Pulse width limited by maximum junction temperature.

(2) Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.

● Ratings And Characteristics Curves (Ta=25°C Unless otherwise specified)



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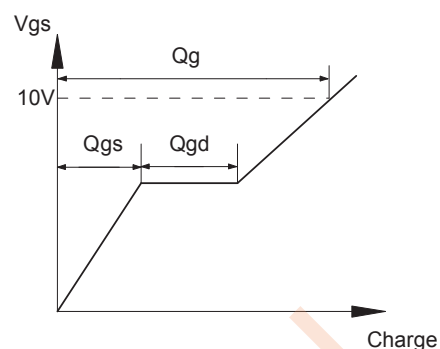
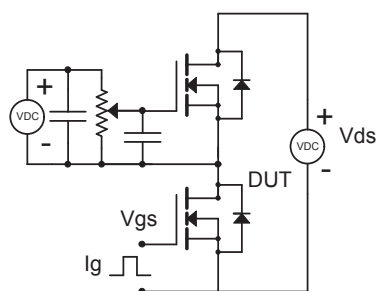
● Package Outline Dimensions (SOP-8)

Symbol	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	5.70	6.30	0.224	0.248
B	5.13MAX.		0.202MAX.	
C	4.72	5.12	0.186	0.201
E	1.80MAX.		0.071MAX.	
F	0.31	0.51	0.0122	0.020
F1	1.27TYP.		0.050TYP.	
G	3.75	4.15	0.148	0.163
H	1.35	1.65	0.053	0.065
H1	0.1	0.25	0.004	0.010
L	0.3	0.7	0.012	0.028
L1	0.21TYP.		0.008TYP.	
θ	-	8°	-	8°

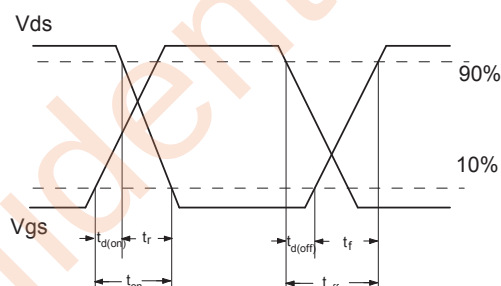
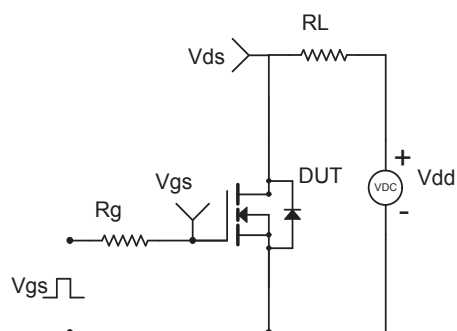
● Suggested Pad Layout

Symbol	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
a	2.90	3.10	0.114	0.122
J	5.10	5.30	0.201	0.209
K	1.17	1.37	0.046	0.054
X	2.10	2.30	0.083	0.091
X1	7.30	7.50	0.287	0.295
Y	0.50	0.70	0.020	0.028
Y1	3.71	3.91	0.146	0.154

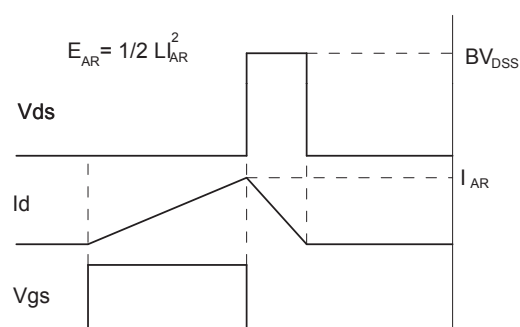
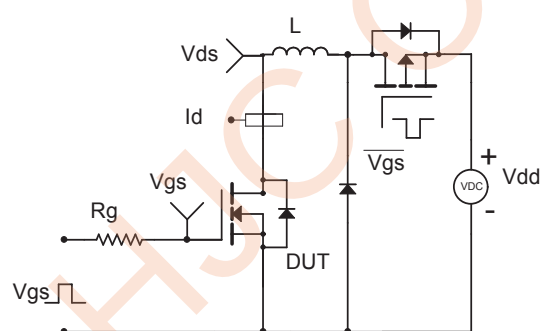
1. Gate Charge Test Circuit & Waveforms



2. Resistive Switching Test Circuit & Waveforms



3. Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



4. Diode Recovery Test Circuit & Waveforms

