

SOP-8 Plastic-Encapsulate MOSFETS

Features

- N MOS
 - $V_{DS}=40V$
 - $I_D=8A$
 - $R_{DS(on)}@V_{GS}=10V < 21m\Omega$
 - $R_{DS(on)}@V_{GS}=4.5V < 32m\Omega$
- P MOS
 - $V_{DS}=-40V$
 - $I_D=-6A$
 - $R_{DS(on)}@V_{GS}=-10V < 36m\Omega$
 - $R_{DS(on)}@V_{GS}=-4.5V < 47m\Omega$
- Low Gate Charge and Rdson
- Fast Switching Speedze
- Improved dv/dt capability, high ruggedness

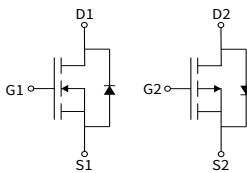
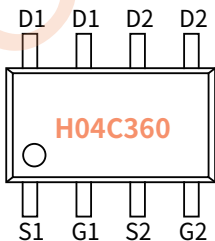
Applications

- Power Switching Application
- Low voltage applications
- DC/DC Converter

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



Drain-source Voltage
40 /-40 V
Drain Current
8 /-6 Ampere



Ordering Information

PACKAGE	PACKAGE CODE	UNIT WEIGHT(g)	REEL(pcs)	BOX(pcs)	CARTON(pcs)	DELIVERY MODE
SOP-8	R3	0.077	4000	8000	48000	13"

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

PARAMETER	SYMBOL	UNIT	VALUE
Drain-source Voltage	V_{DS}	V	40
Gate-source Voltage	V_{GS}	V	± 20
Drain Current	I_D	A	8
Pulsed Drain Current ⁽¹⁾	I_{DM}	A	32
Total Power Dissipation	P_D	W	1.4
Junction temperature	T_J	°C	-55 ~ +150
Storage temperature	T_{stg}	°C	-55 ~ +150
Thermal Resistance Junction-to-Ambient	$R_{\theta JA}$	°C / W	89

● N MOS 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	40	—	—
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=40V, V_{GS}=0V$	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	3.0
Static Drain-Source On-Resistance ⁽²⁾	$R_{DS(on)}$	$V_{GS}=10V, I_D=6A$	m Ω	—	15	21
		$V_{GS}=4.5V, I_D=6A$		—	21.5	32

● N MOS Dynamic Parameters

PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Input Capacitance	C_{iss}	$V_{DS}=20V, V_{GS}=0V, f=1MHz$	pF	—	908	—
Output Capacitance	C_{oss}			—	100	—
Reverse Transfer Capacitance	C_{rss}			—	88	—

● N MOS Switching Parameters

PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Turn-on Delay Time	$t_{D(on)}$	$V_{GS}=10V, V_{DD}=20V, I_D=6A, R_{GEN}=3\Omega$	nS	—	3.3	—
Turn-on Rise Time	t_r		nS	—	4.8	—
Turn-off Delay Time	$t_{D(off)}$		nS	—	26	—
Turn-off fall Time	t_f		nS	—	4	—
Total Gate Charge	Q_g	$V_{DS}=20V, I_D=6A, V_{GS}=10V$	nC	—	20.9	—
Gate-Source Charge	Q_{gs}		nC	—	2.6	—
Gate-Drain Charge	Q_{gd}		nC	—	5.5	—

● N MOS Drian-Source Diode Characteristics

PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Diode Forward Voltage	V_{SD}	$I_S=8A, V_{GS}=0V$	V	—	—	1.2
Maximum Body-Diode Continuous Current	I_S	—	A	—	—	8

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

PARAMETER	SYMBOL	UNIT	VALUE
Drain-source Voltage	V_{DS}	V	-40
Gate-source Voltage	V_{GS}	V	± 20
Drain Current	I_D	A	-6
Pulsed Drain Current ⁽¹⁾	I_{DM}	A	-24
Total Power Dissipation	P_D	W	1.4
Junction temperature	T_J	°C	-55 ~+150
Storage temperature	T_{stg}	°C	-55 ~+150
Thermal Resistance Junction-to-Ambient	$R_{\theta JA}$	°C / W	89

● P MOS 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	-40	—	—
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=-40V, V_{GS}=0V$	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	-3.0
Static Drain-Source On-Resistance ⁽²⁾	$R_{DS(on)}$	$V_{GS}=-10V, I_D=-5A$	m Ω	—	26	36
		$V_{GS}=-4.5V, I_D=-5A$		—	33	47

● P MOS Dynamic Parameters

PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Input Capacitance	C_{iss}	$V_{DS}=-20V, V_{GS}=0V, f=1MHz$	pF	—	1282	—
Output Capacitance	C_{oss}			—	121	—
Reverse Transfer Capacitance	C_{rss}			—	108	—

● P MOS Switching Parameters

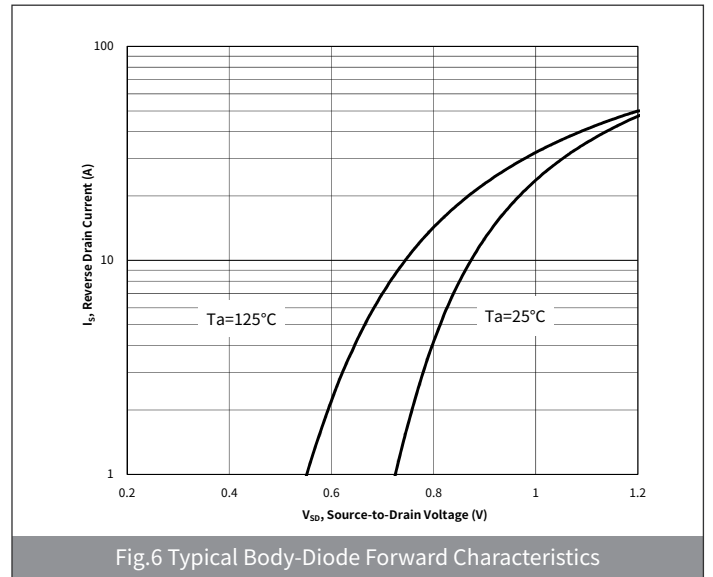
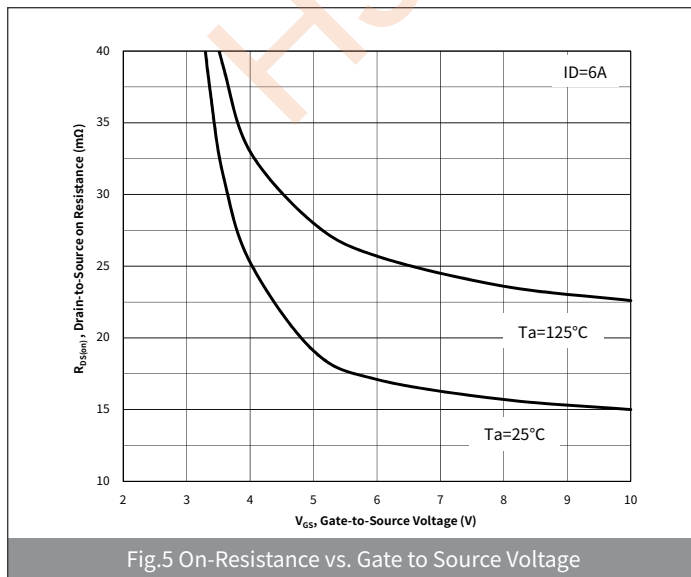
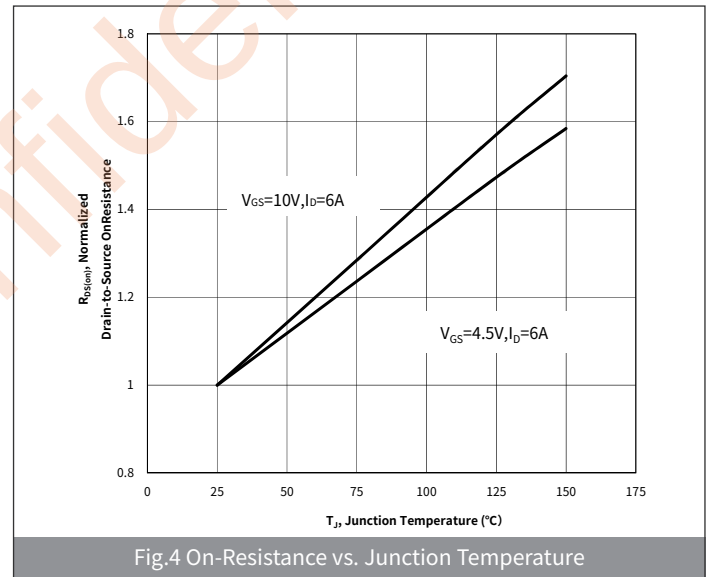
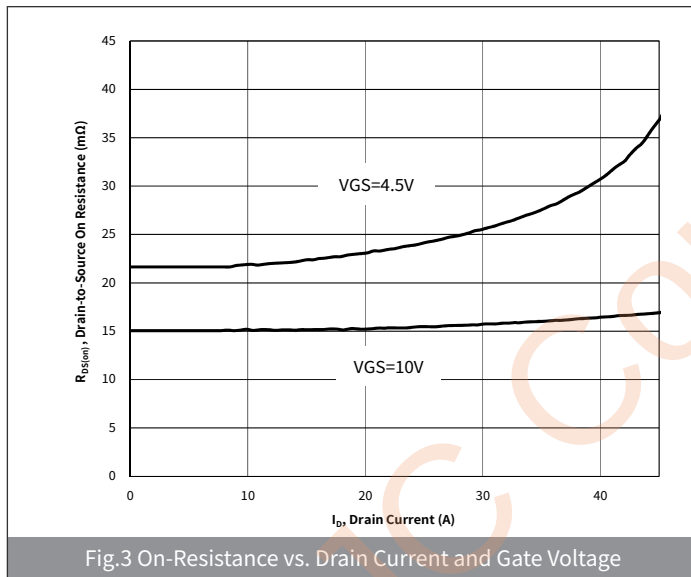
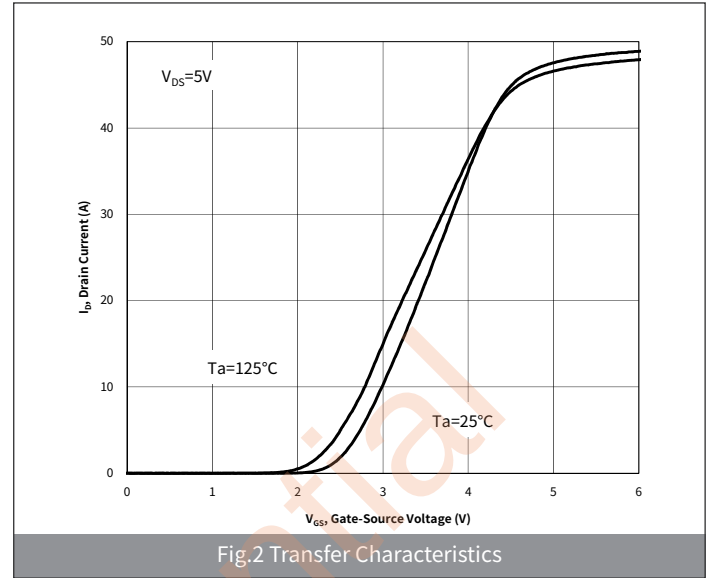
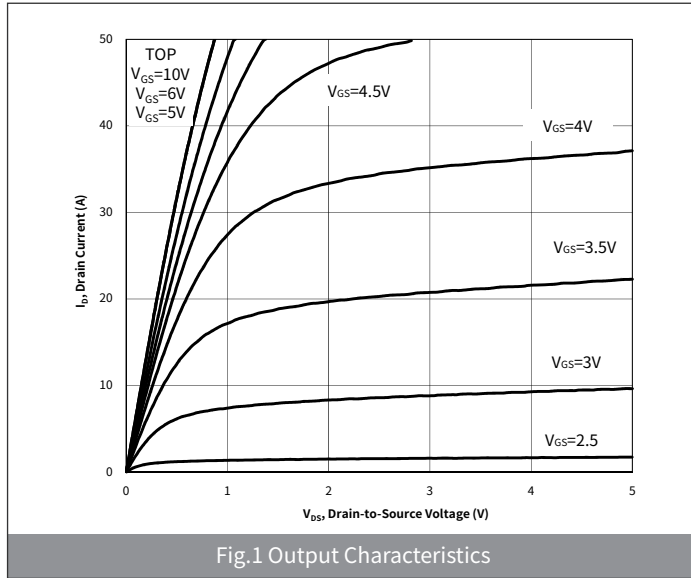
PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Turn-on Delay Time	$t_{D(on)}$	$V_{GS}=-10V, V_{DD}=-20V, I_D=-5A, R_{GEN}=6\Omega$	nS	—	7	—
Turn-on Rise Time	t_r		nS	—	3	—
Turn-off Delay Time	$t_{D(off)}$		nS	—	20	—
Turn-off fall Time	t_f		nS	—	12	—
Total Gate Charge	Q_g	$V_{DS}=-20V, I_D=-5A, V_{GS}=-10V$	nC	—	27	—
Gate-Source Charge	Q_{gs}		nC	—	3.3	—
Gate-Drain Charge	Q_{gd}		nC	—	6	—

● P MOS Drian-Source Diode Characteristics

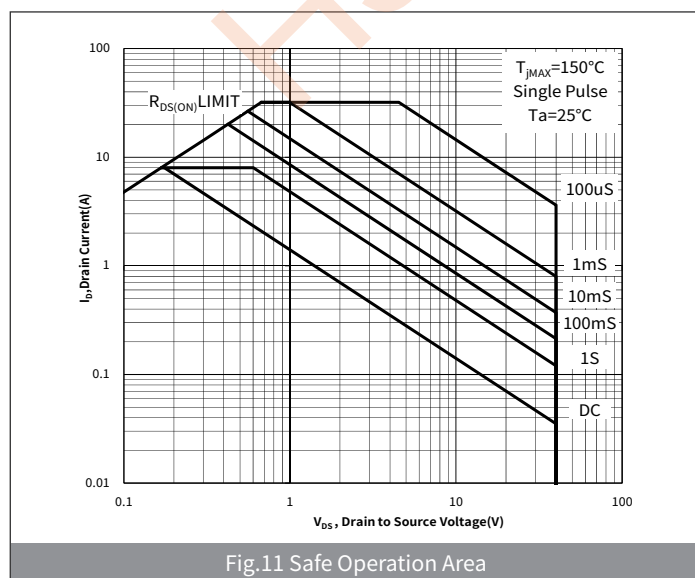
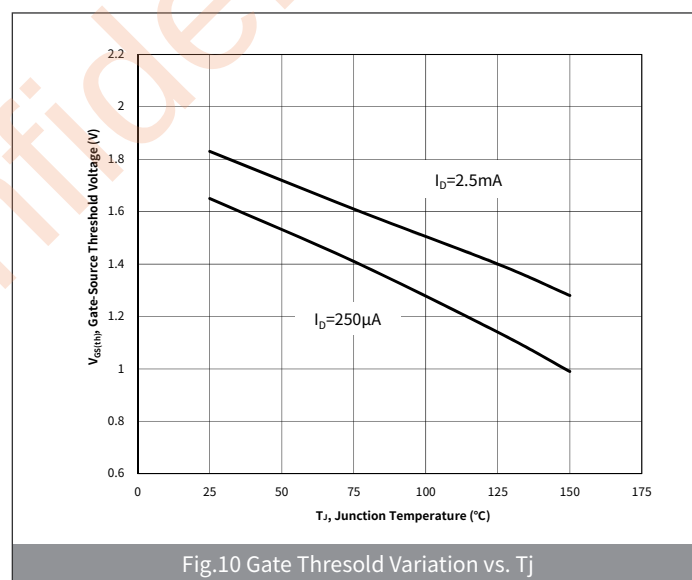
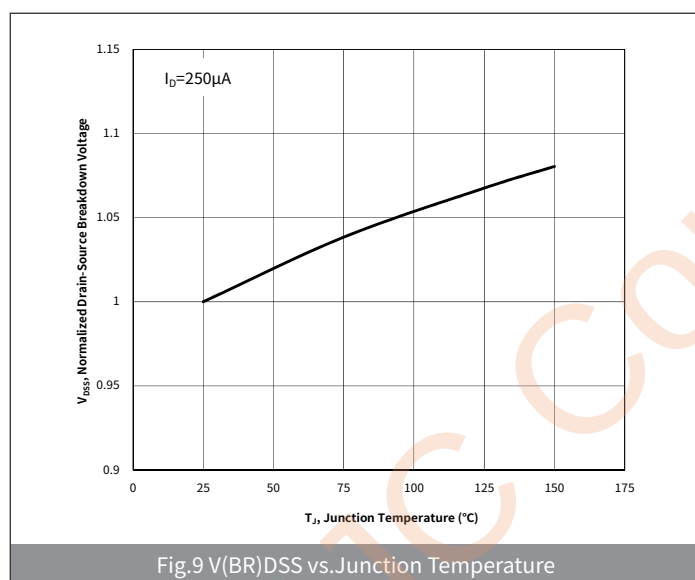
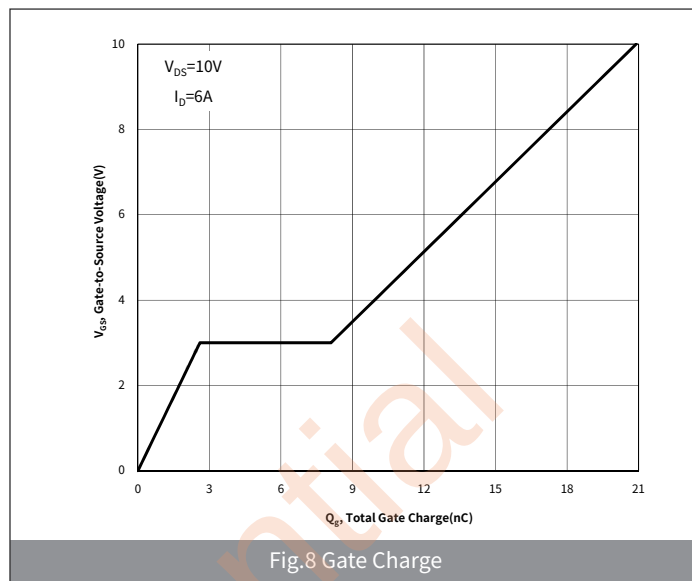
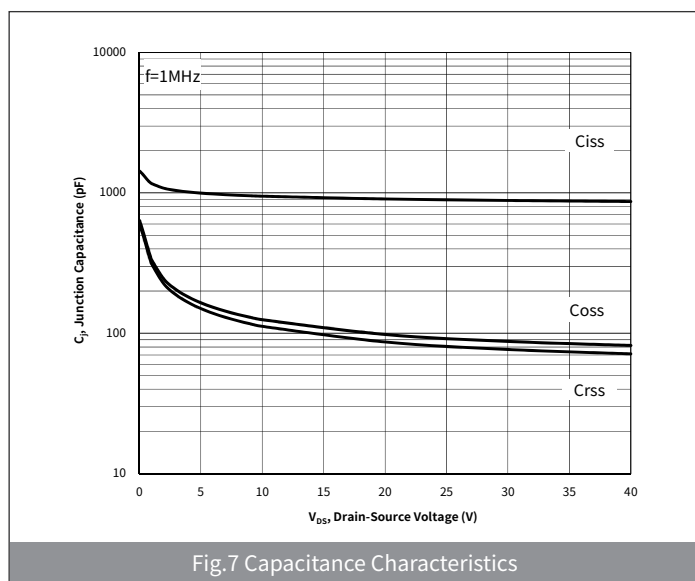
PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Diode Forward Voltage	V_{SD}	$I_S=-6A, V_{GS}=0V$	V	—	—	-1.2
Maximum Body-Diode Continuous Current	I_S	—	A	—	—	-6

Note :
(1)Repetitive Rating: Pulse width limited by maximum junction temperature.
(2)Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.

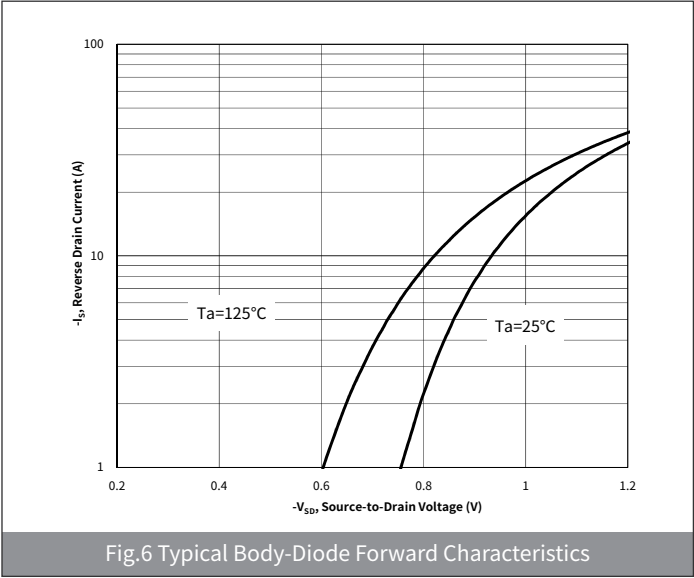
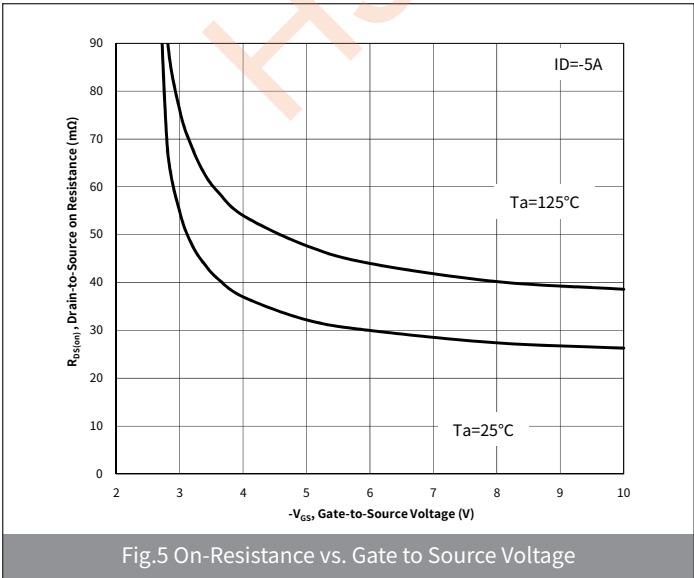
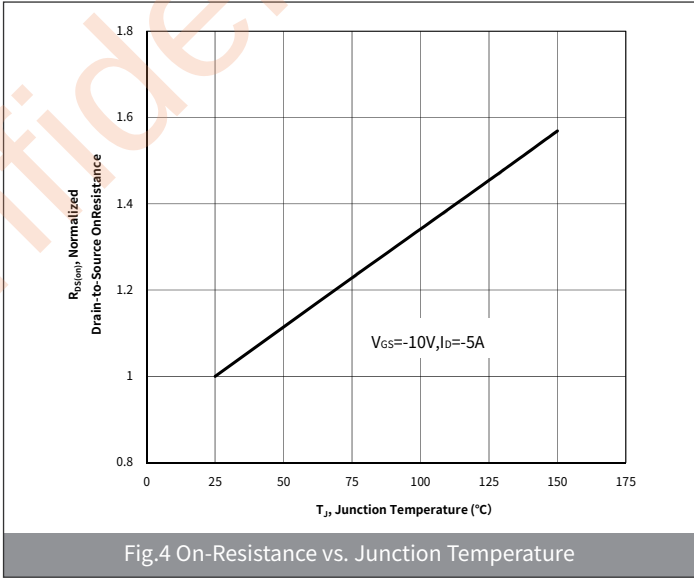
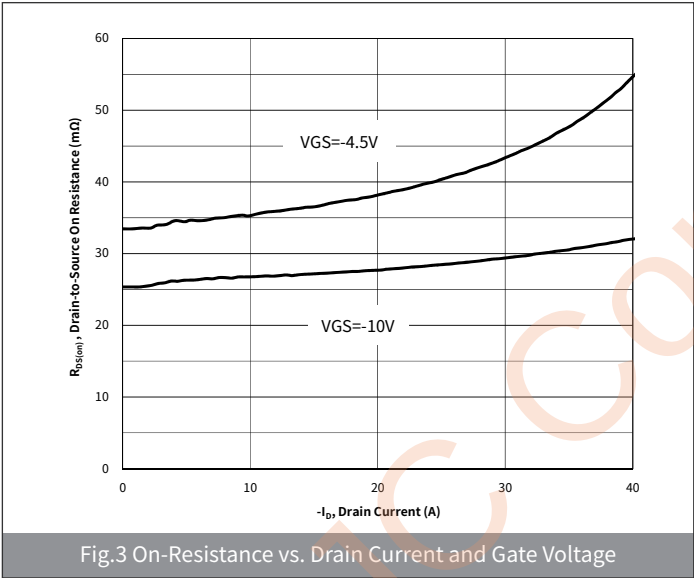
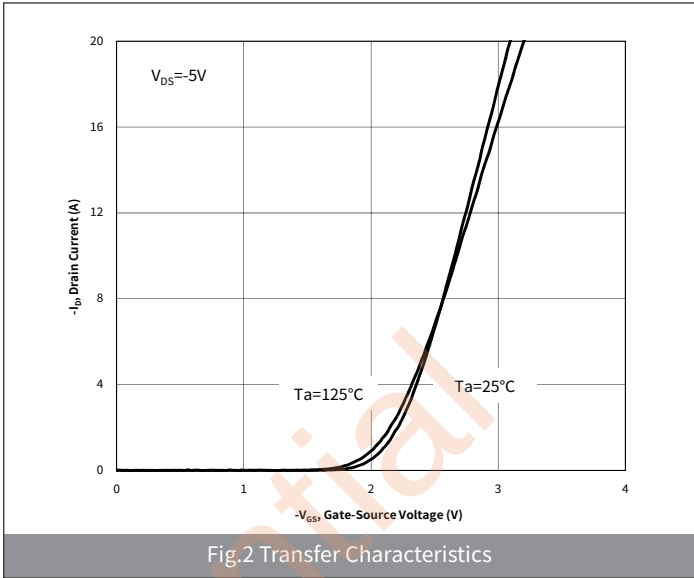
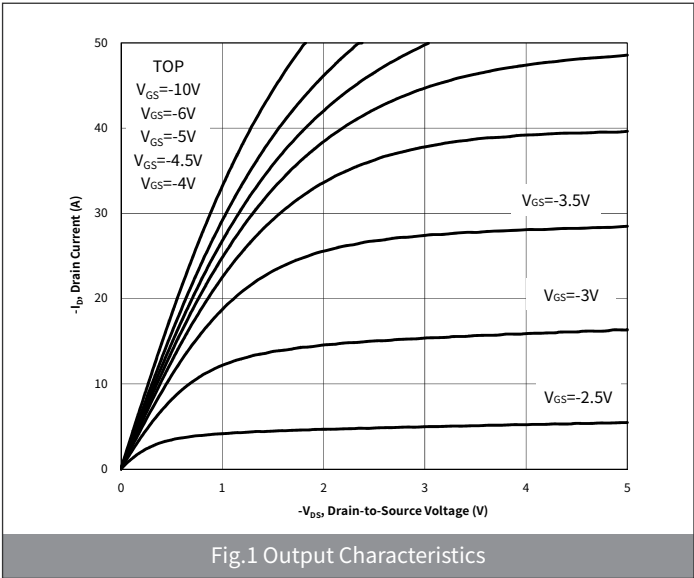
● N MOS Ratings And Characteristics Curves (Ta=25°C Unless otherwise specified)



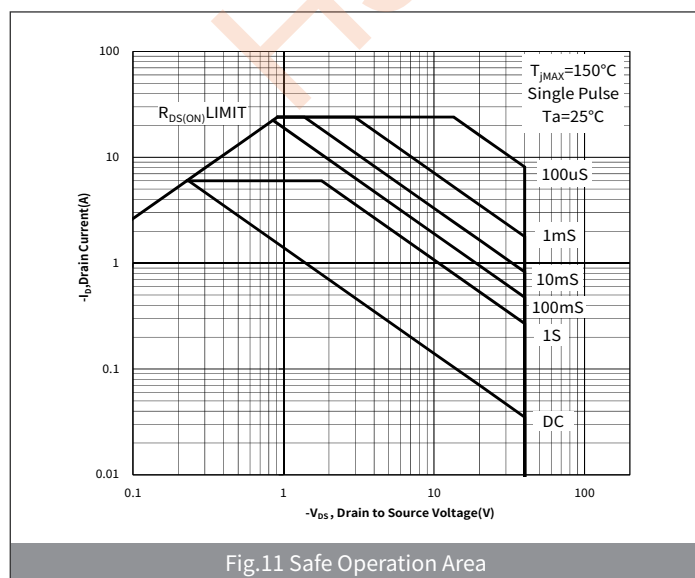
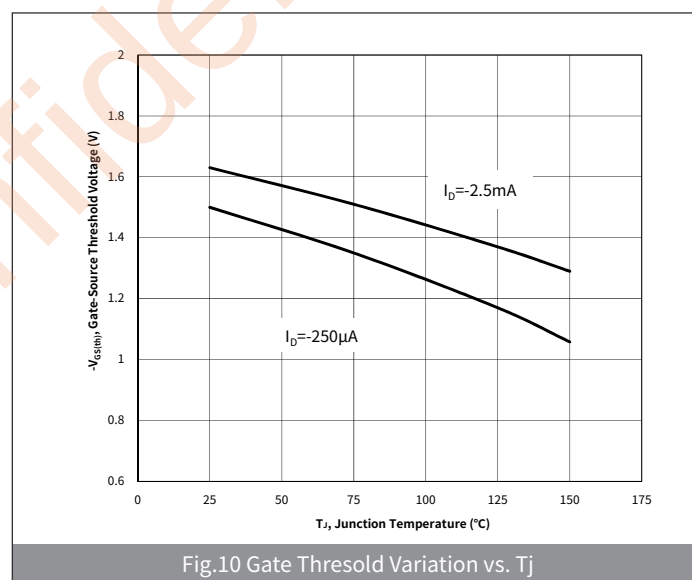
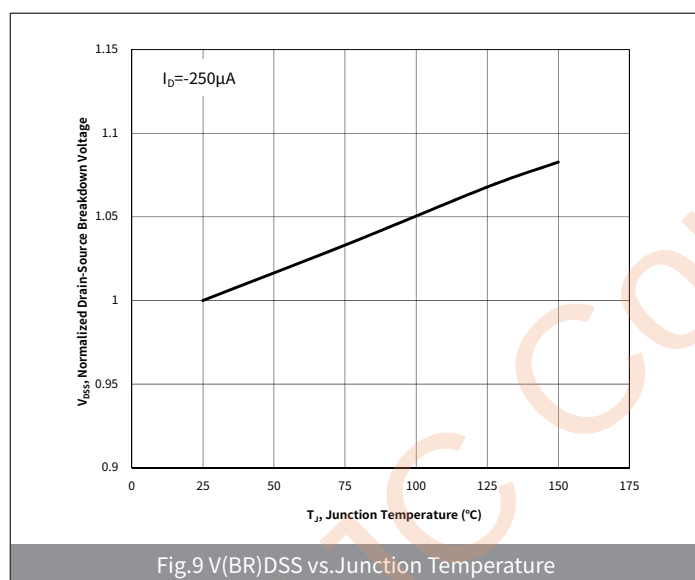
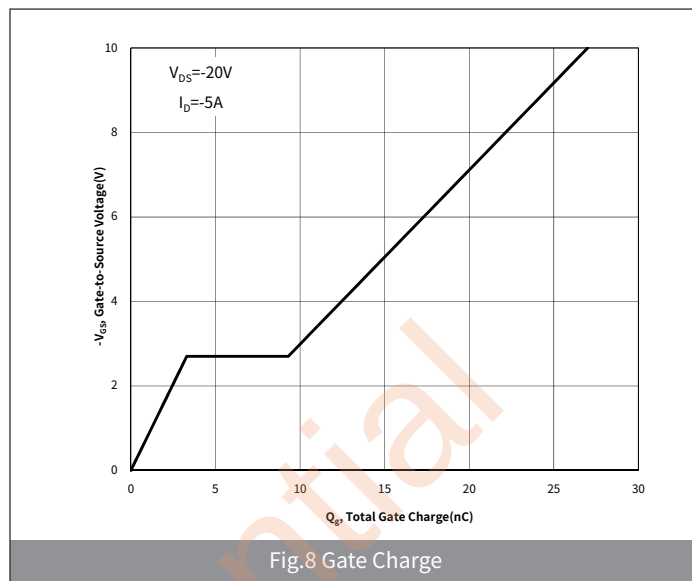
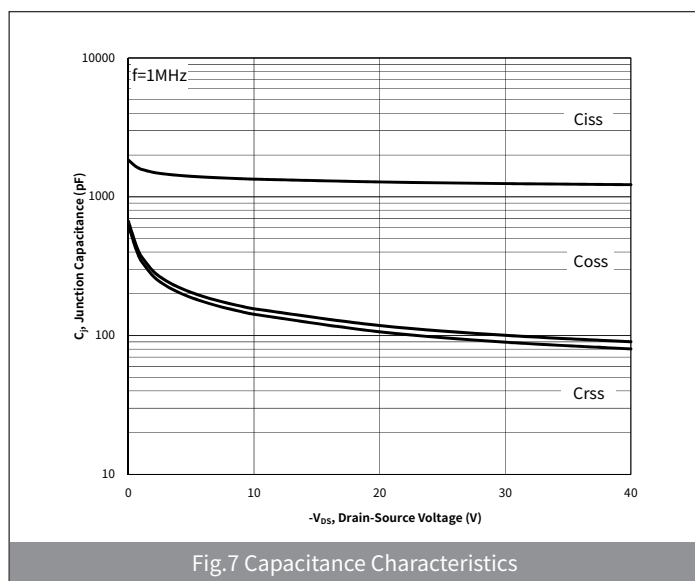
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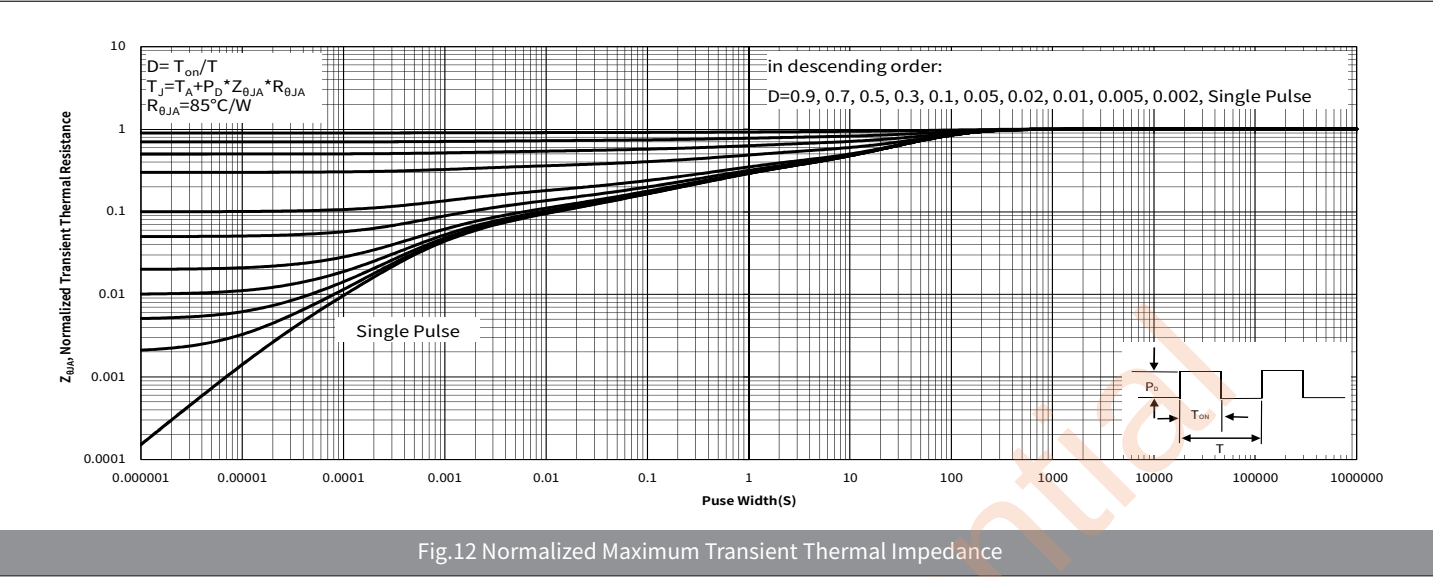
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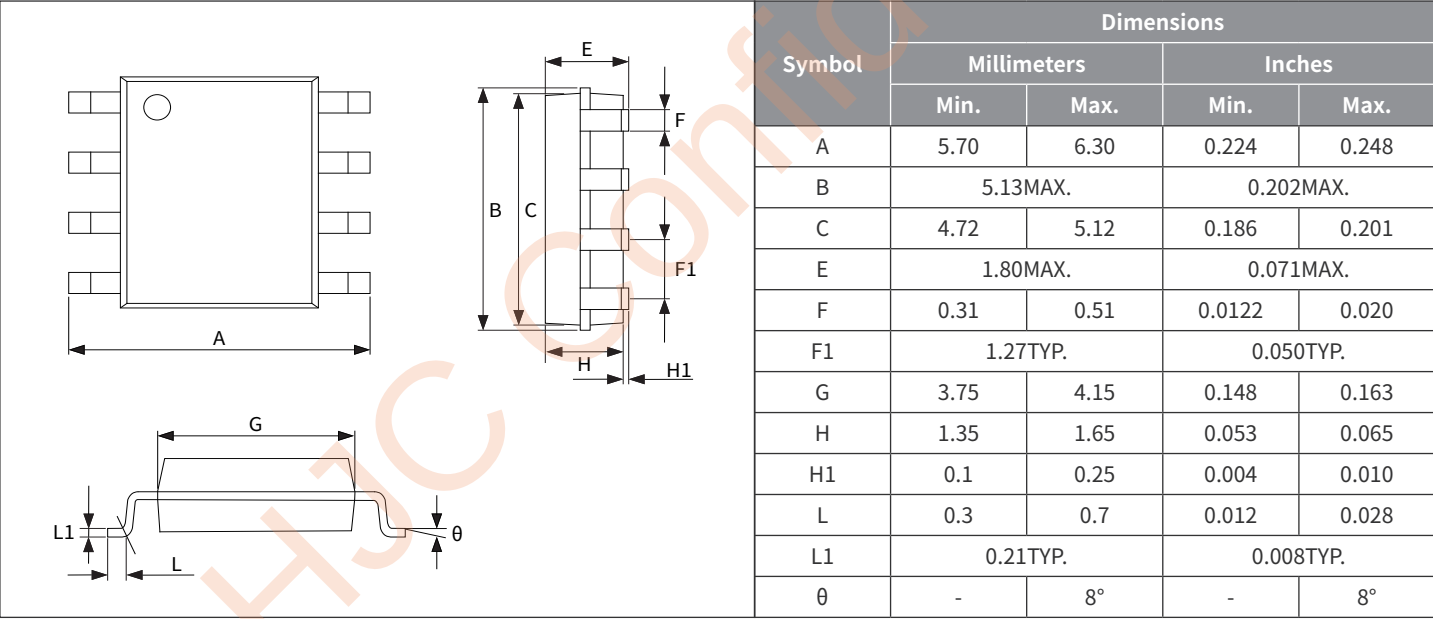
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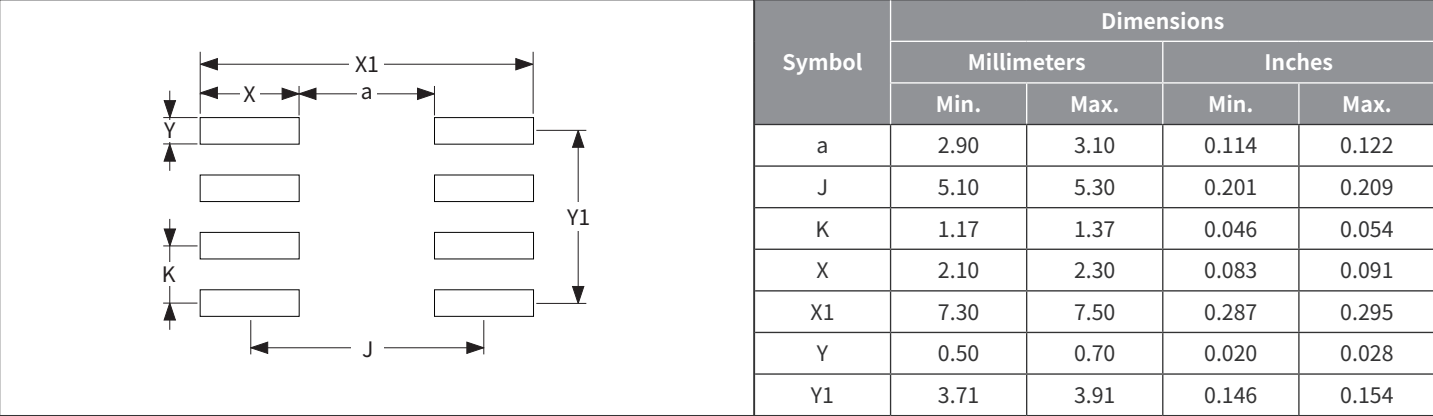
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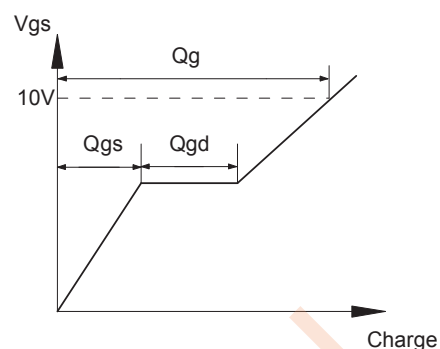
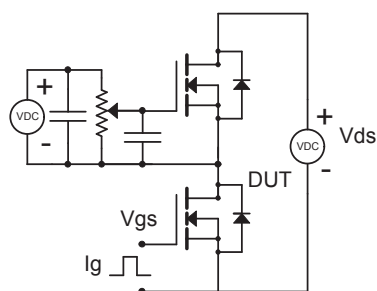
Package Outline Dimensions (SOP-8)



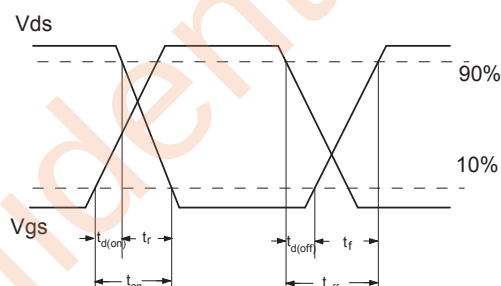
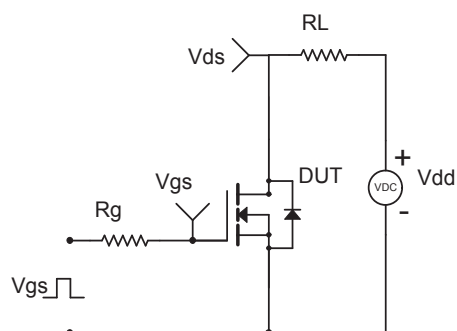
Suggested Pad Layout



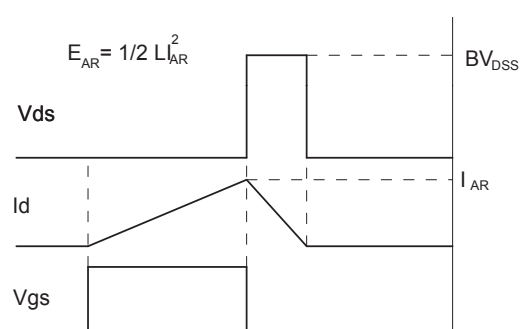
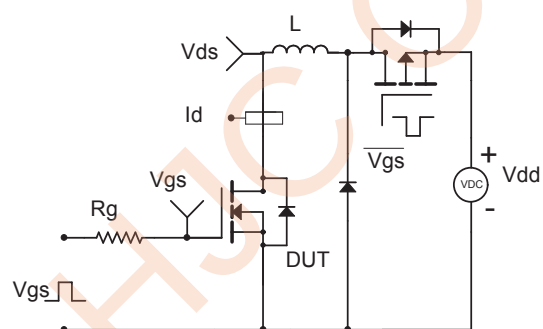
1. Gate Charge Test Circuit & Waveforms



2. Resistive Switching Test Circuit & Waveforms



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



4. Diode Recovery Test Circuit & Waveforms

