

SOT-89 Plastic-Encapsulate MOSFETS

Features

- $V_{DS}=-60V$
- $I_D=-5.5A$
- $R_{DS(on)}@V_{GS}=-10V < 66m\Omega$
- $R_{DS(on)}@V_{GS}=-4.5V < 88m\Omega$
- Avalanche energy tested
- Fast Switching Speedze
- Improved dv/dt capability, high ruggedness

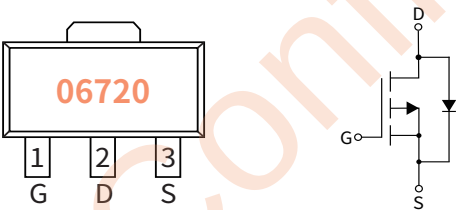
Applications

- Power Management Switch
- Battery Protection Application

Mechanical Data

- Case: SOT-89
Molding compound meets UL 94V-0 flammability rating, RoHS-compliant,halogen-free
- Terminals: Solder plated, solderable per MIL-STD-750,Method 2026

Function Diagram



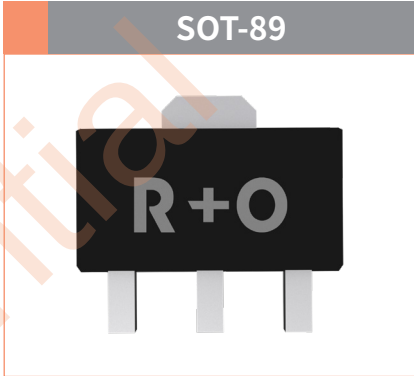
Ordering Information

PACKAGE	PACKAGE CODE	UNIT WEIGHT(g)	REEL(pcs)	BOX(pcs)	CARTON(pcs)	DELIVERY MODE
SOT-89	R1	0.045	1000	10000	40000	7"

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

PARAMETER	SYMBOL	UNIT	VALUE
Drain-source Voltage	V_{DS}	V	-60
Gate-source Voltage	V_{GS}	V	± 20
Drain Current	I_D	A	-5.5
Pulsed Drain Current ⁽¹⁾	I_{DM}	A	-22
Total Power Dissipation	P_D	W	3.2
Junction temperature	T_J	°C	-55 ~+150
Storage temperature	T_{stg}	°C	-55 ~+150
Thermal Resistance Junction-to-Ambient	$R_{\theta JA}$	°C / W	38

Drain-source Voltage
-60 V
Drain Current
-5.5 Ampere



● 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	-60	—	—
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=-60V, V_{GS}=0V$	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	-1.2	-1.5	-2.2
Static Drain-Source On-Resistance ⁽²⁾	$R_{DS(on)}$	$V_{GS}=-10V, I_D=-5A$	m Ω	—	52	66
		$V_{GS}=-4.5V, I_D=-3A$		—	60	88

● Dynamic Parameters

PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Input Capacitance	C_{iss}	$V_{DS}=-30V, V_{GS}=0V, f=1MHz$	pF	—	1175	—
Output Capacitance	C_{oss}			—	75	—
Reverse Transfer Capacitance	C_{rss}			—	65	—

● Switching Parameters

PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Turn-on Delay Time	$t_{D(on)}$	$V_{GS}=-10V, V_{DD}=-30V, I_D=-5A, R_{GEN}=3\Omega$	nS	—	7.8	—
Turn-on Rise Time	t_r		nS	—	4.5	—
Turn-off Delay Time	$t_{D(off)}$		nS	—	39	—
Turn-off fall Time	t_f		nS	—	7.8	—
Total Gate Charge	Q_g	$V_{DS}=-30V, I_D=-5A, V_{GS}=-10V$	nC	—	21	—
Gate-Source Charge	Q_{gs}		nC	—	2.9	—
Gate-Drain Charge	Q_{gd}		nC	—	5	—

● Drian-Source Diode Characteristics

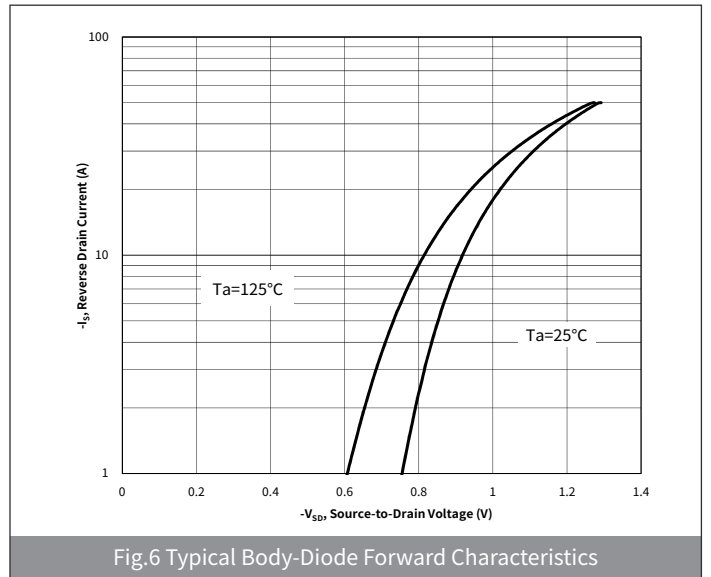
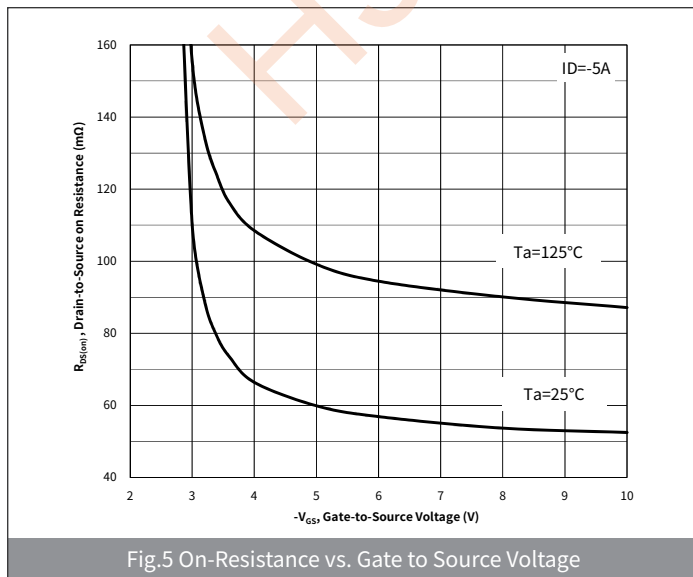
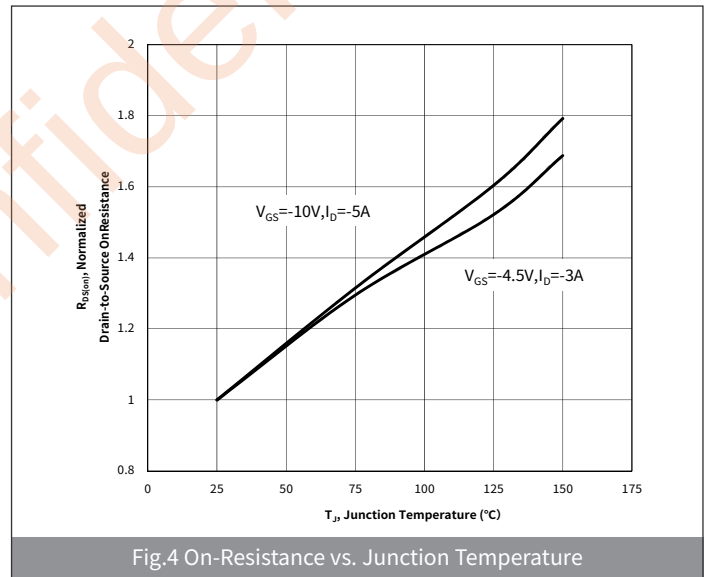
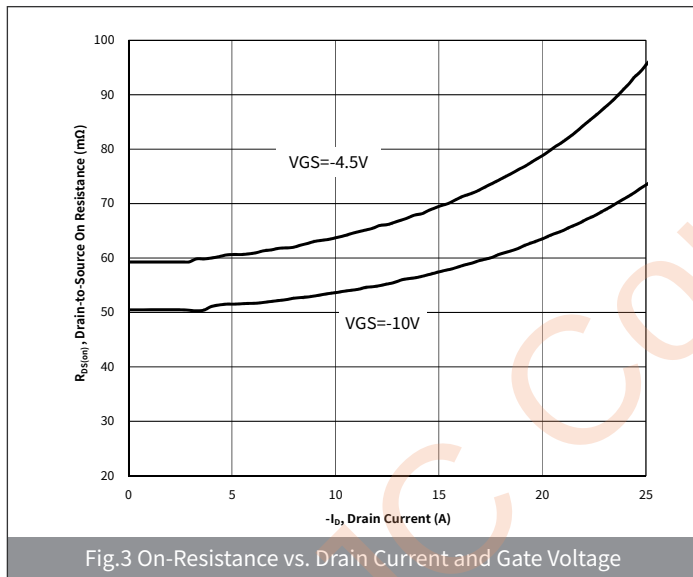
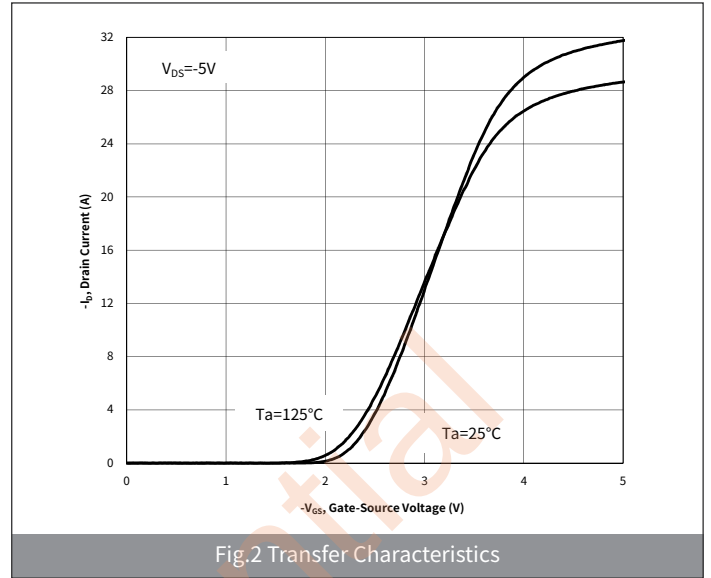
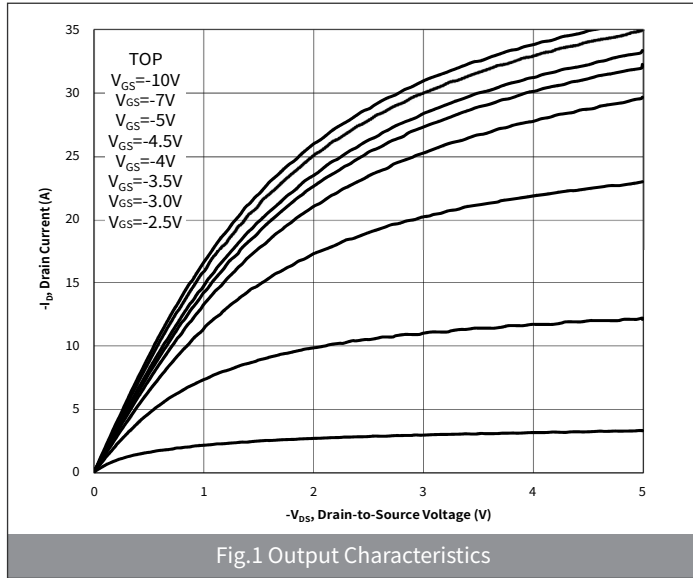
PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Diode Forward Voltage	V_{SD}	$I_S=-5.5A, V_{GS}=0V$	V	—	—	1.2
Maximum Body-Diode Continuous Current	I_S	—	A	—	—	5.5

Note :

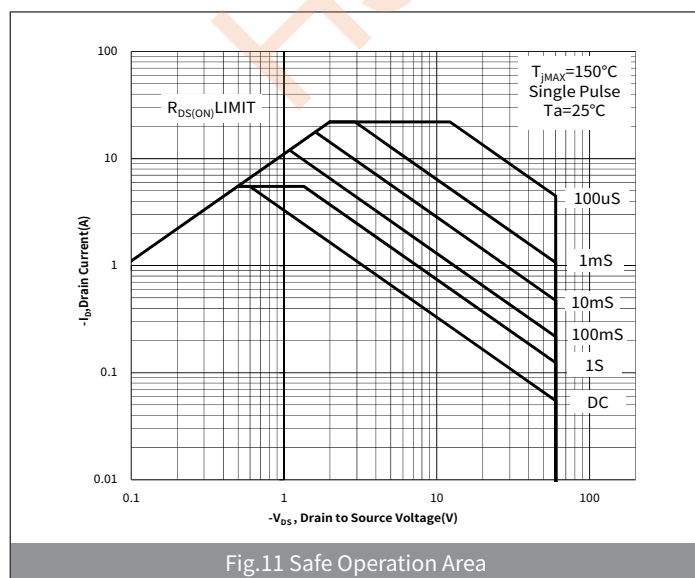
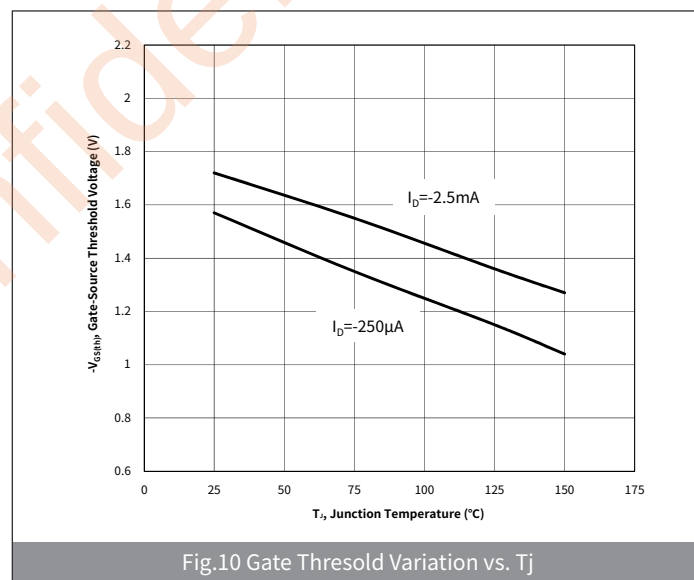
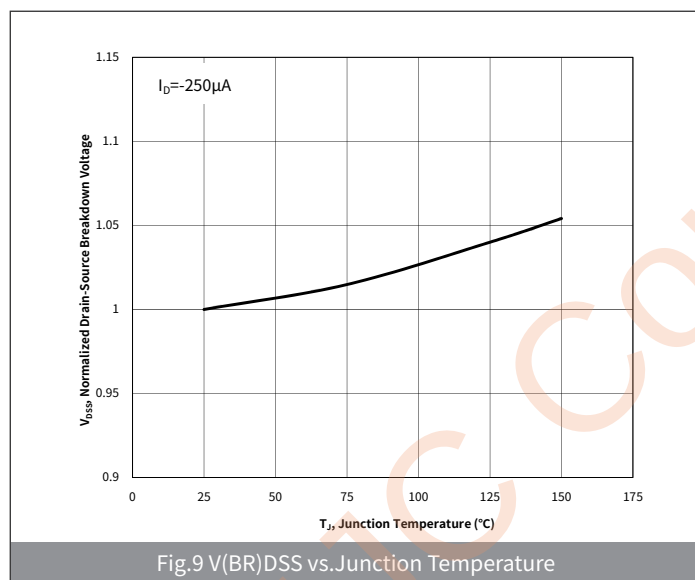
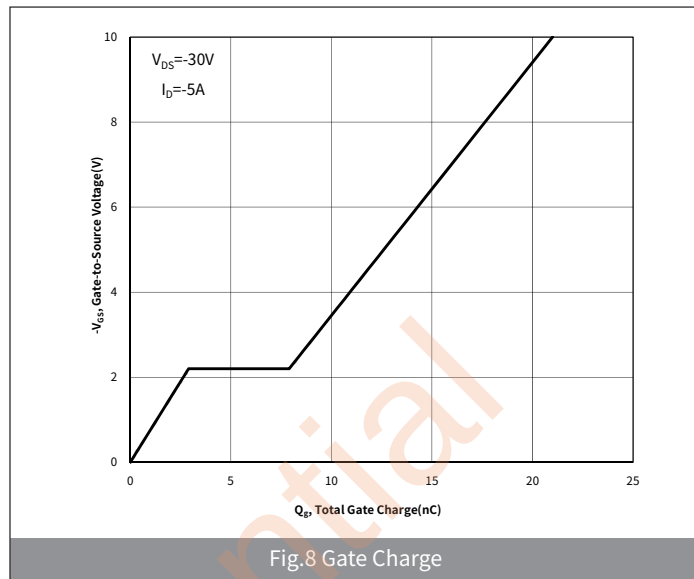
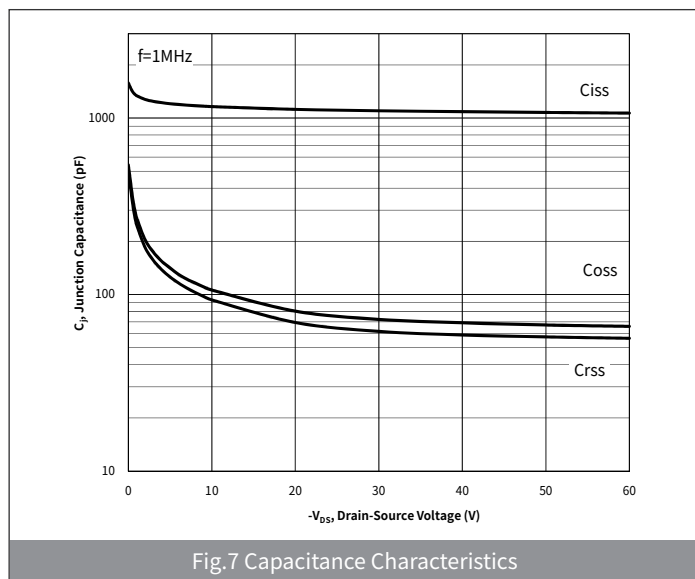
(1) Repetitive Rating: Pulse width limited by maximum junction temperature.

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

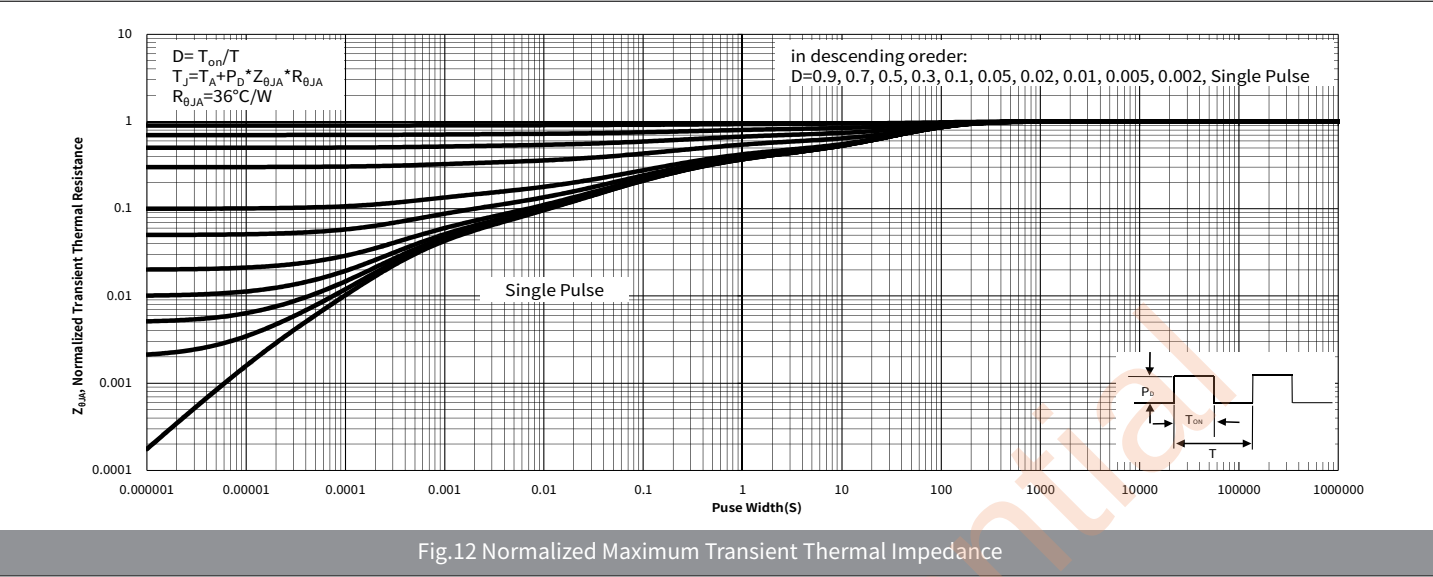
● Ratings And Characteristics Curves ($T_a=25^\circ\text{C}$ Unless otherwise specified)



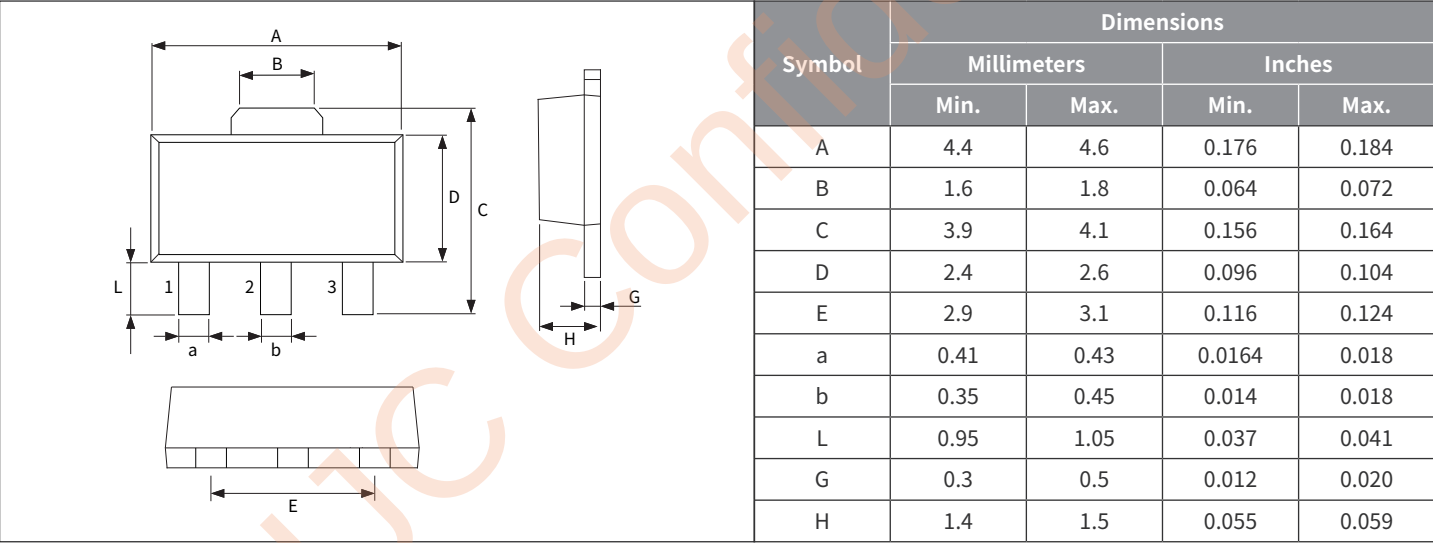
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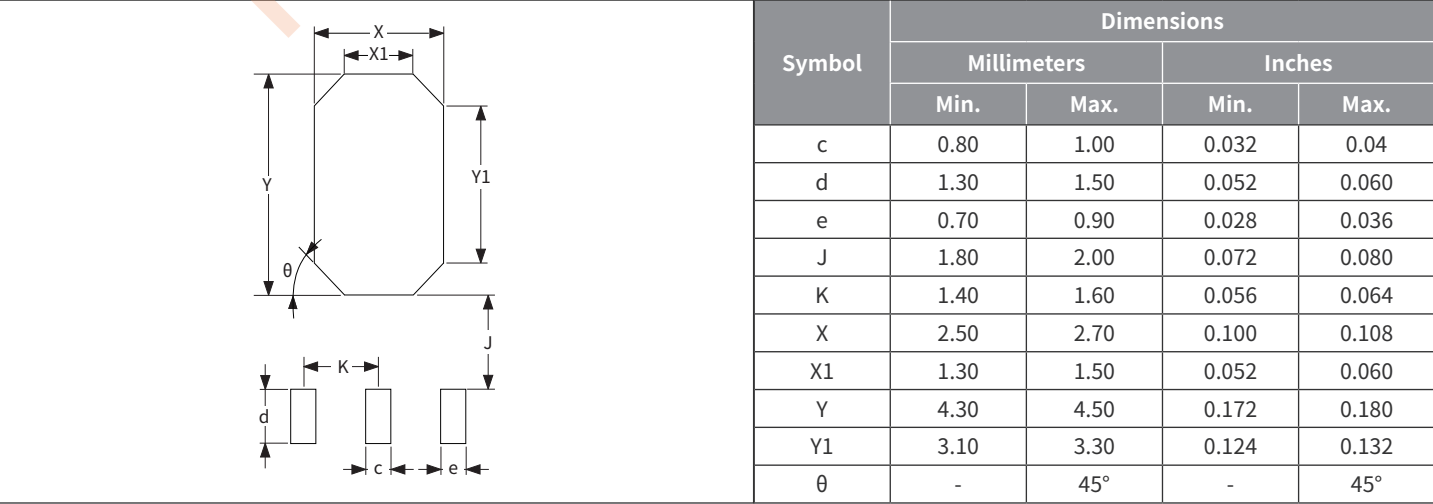
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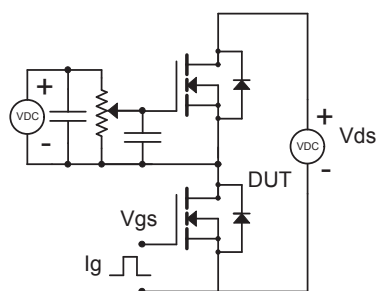
● Package Outline Dimensions (SOT-89)



● Suggested Pad Layout



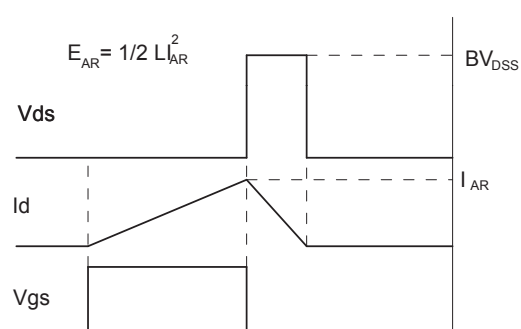
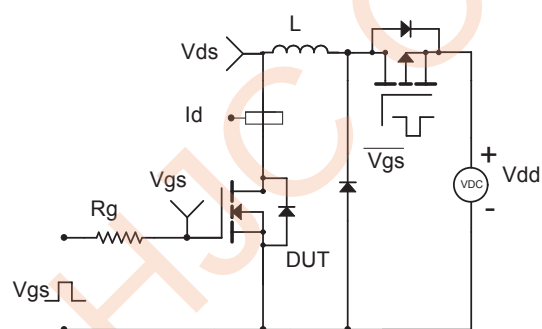
1. Gate Charge Test Circuit & Waveforms



2. Resistive Switching Test Circuit & Waveforms



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



4. Diode Recovery Test Circuit & Waveforms

