

## Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	$I_D$
-60V	120mΩ@-10V	-5A
	140mΩ@-4.5V	

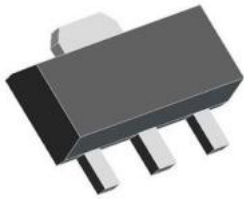
## Feature

- High power and current handling capability
- Surface mount package

## Application

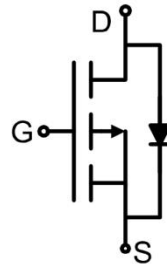
- Battery Switch
- DC-DC Converters

## Package

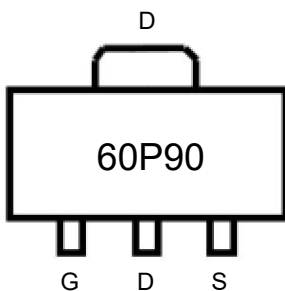


SOT-89

## Circuit diagram



## Marking



### Absolute maximum ratings ( $T_a=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	$V_{DS}$	-60	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Continuous Drain Current	$I_D$	-5	A
Pulsed Drain Current	$I_{DM}$	-20	A
Power Dissipation	$P_D$	1	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	125	$^\circ\text{C/W}$
Junction Temperature	$T_J$	150	$^\circ\text{C}$
Storage Temperature	$T_{STG}$	-55 ~ +150	$^\circ\text{C}$

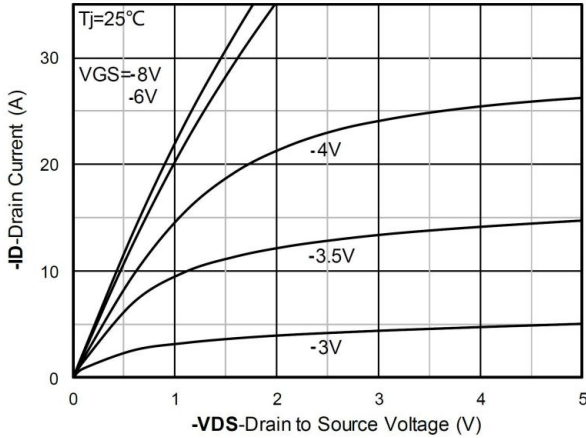
### Electrical characteristics ( $T_a=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
<b>Static Characteristics</b>						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = -250\mu\text{A}$	-60			V
Zero gate voltage drain current	$I_{DSS}$	$V_{DS} = -48V, V_{GS} = 0V$			-1	$\mu\text{A}$
Gate-body leakage current	$I_{GSS}$	$V_{GS} = \pm 20V, V_{DS} = 0V$			$\pm 100$	nA
Gate threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\mu\text{A}$	-1.0	-1.5	-2.2	V
Drain-source on-resistance	$R_{DS(on)}$	$V_{GS} = -10V, I_D = -3A$		90	120	m $\Omega$
		$V_{GS} = -4.5V, I_D = -2.5A$		110	140	
<b>Dynamic characteristics<sup>1)</sup></b>						
Input Capacitance	$C_{iss}$	$V_{DS} = -30V, V_{GS} = 0V, f = 1\text{MHz}$		960		pF
Output Capacitance	$C_{oss}$			87		
Reverse Transfer Capacitance	$C_{rss}$			38		
Total Gate Charge	$Q_g$	$V_{DS} = -30V, V_{GS} = -10V, I_D = -4A$		15.7		nC
Gate-Source Charge	$Q_{gs}$			3		
Gate-Drain Charge	$Q_{gd}$			3.5		
Turn-on delay time	$t_{d(on)}$	$V_{GS} = -10V, V_{DD} = -30V, R_G = 3\Omega, I_D = -5A$		9		nS
Turn-on rise time	$t_r$			11		
Turn-off delay time	$t_{d(off)}$			25		
Turn-off fall time	$t_f$			12		
<b>Source-Drain Diode characteristics</b>						
Diode Forward voltage	$V_{SD}$	$V_{GS} = 0V, I_S = -1A, T_J = 25^\circ\text{C}$			-1.2	V

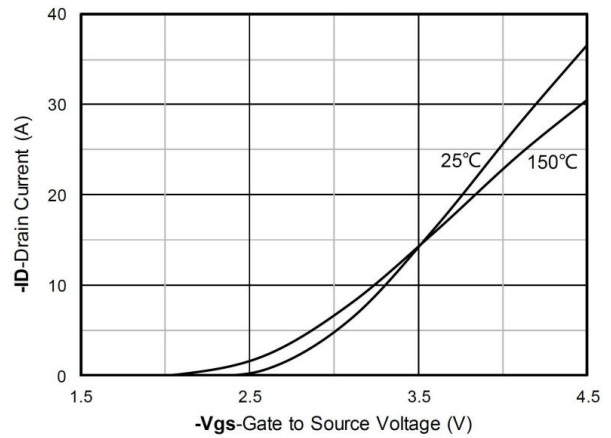
Notes:

1) Guaranteed by design, not subject to production testing.

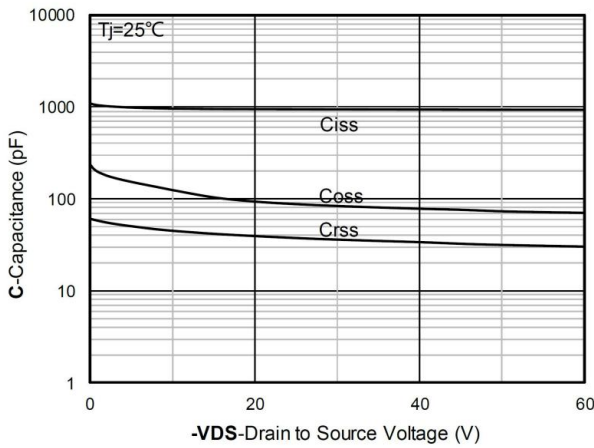
## Typical Characteristics



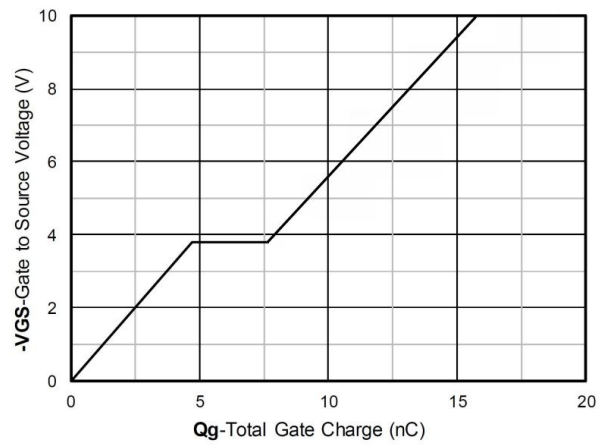
Output Characteristics



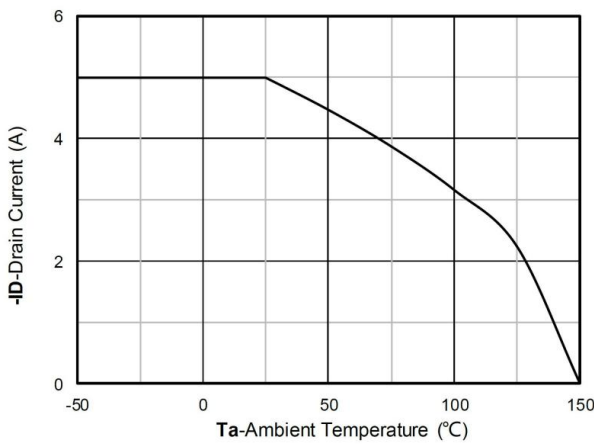
Transfer Characteristics



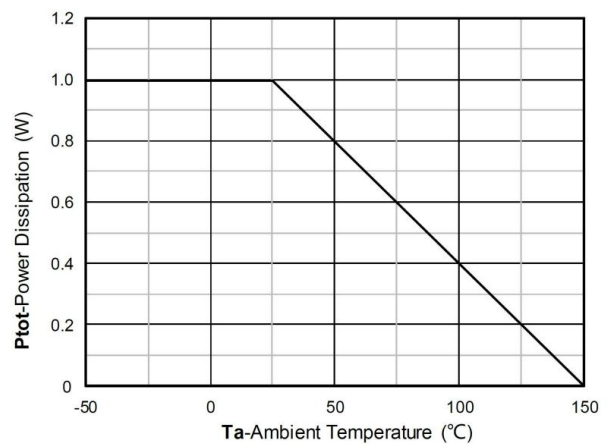
Capacitance Characteristics



Gate Charge

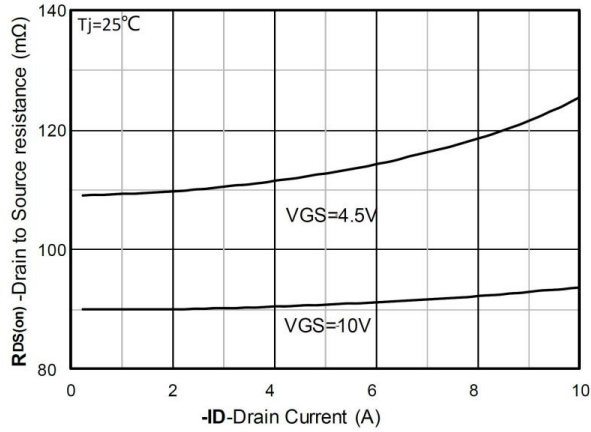


Current dissipation

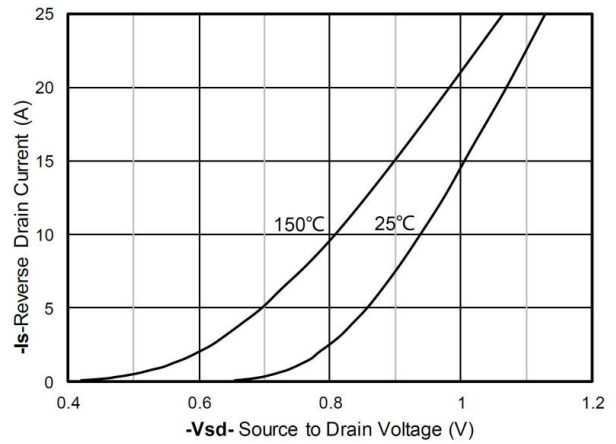


Power dissipation

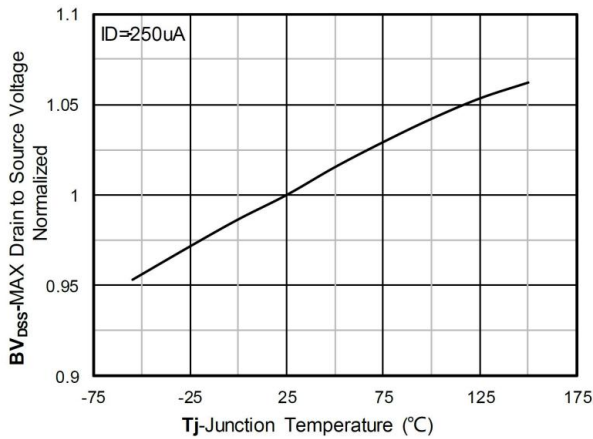
## Typical Characteristics



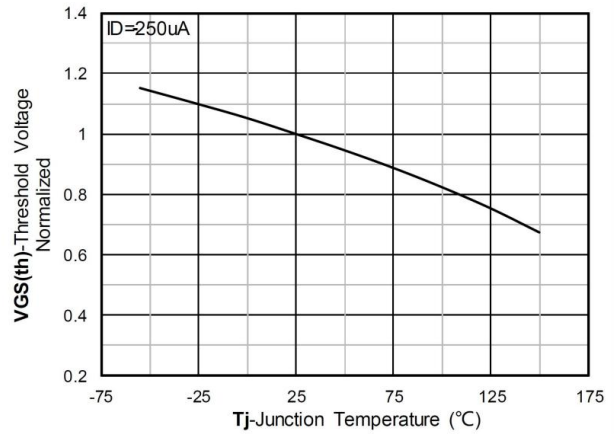
RDS(on) VS Drain Current



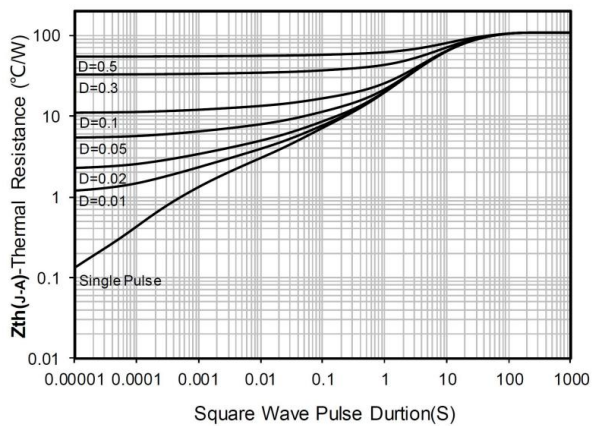
Forward characteristics of reverse diode



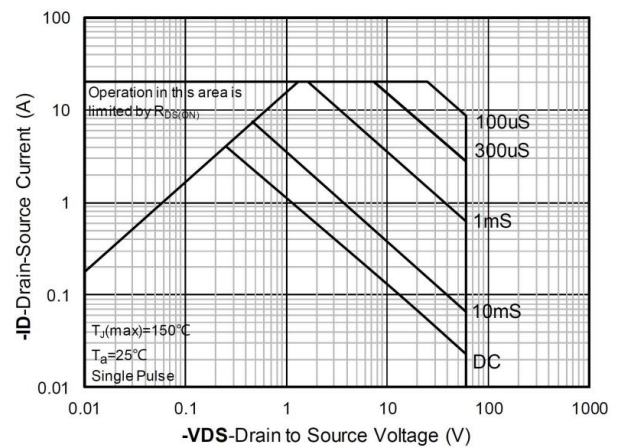
Normalized breakdown voltage



Normalized Threshold voltage

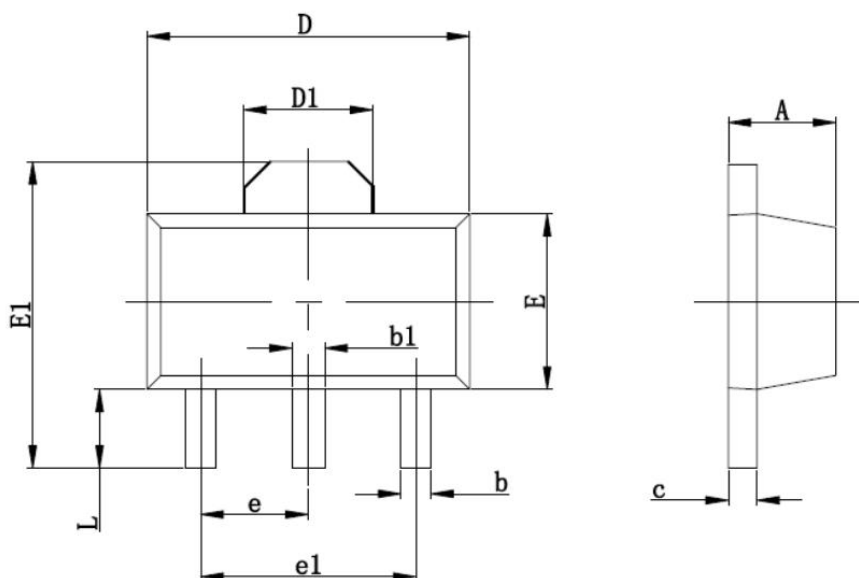


Maximum Transient Thermal Impedance



Safe Operation Area

### SOT-89 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.400	1.600	0.055	0.063
b	0.320	0.520	0.013	0.020
b1	0.400	0.580	0.016	0.023
c	0.350	0.440	0.014	0.017
D	4.300	4.700	0.169	0.185
D1	1.550 TYP		0.061 TYP	
E	2.250	2.650	0.089	0.104
E1	3.910	4.350	0.154	0.171
e	1.500 TYP		0.060 TYP	
e1	3.000 TYP		0.118 TYP	
L	0.800	1.200	0.031	0.047