Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
-60V	90mΩ@-10V	-5A
	110mΩ@-4.5V	

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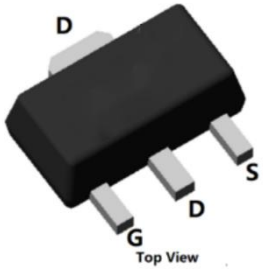
Feature

- High power and current handing capability
- Surface mount package

Application

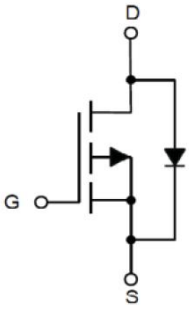
- Battery Switch
- DC/DC Converter

Package

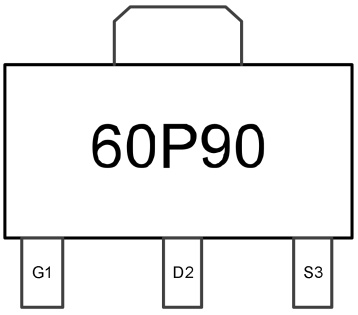


SOT-89-3L

Circuit diagram



Marking



60P90 **:Device Code**

Order Information

Device	Package	Unit/Tape
SP60P90T8	SOT-89-3L	1000

Absolute maximum ratings (Ta=25℃, unless otherwise noted)

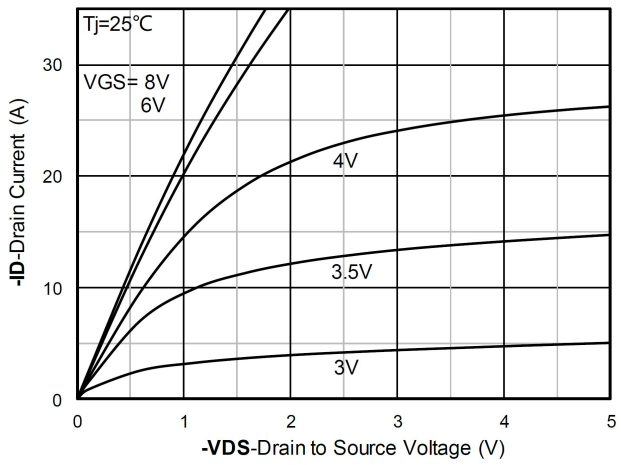
Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DSS}	-60	V
Gate-Source Voltage	V_{GSS}	±20	V
Continuous Drain Current	I_D	-5	A
Pulse Drain Current Tested	I_{DM}	-20	A
Power Dissipation	P_D	1	W
Thermal Resistance Junction-to-Ambient	$R_{\theta JA}$	125	°C/W
Storage Temperature Range	T_{STG}	-55 to 150	°C
Operating Junction Temperature Range	T_J	-55 to 150	°C

Electrical characteristics (Ta=25℃, unless otherwise noted)

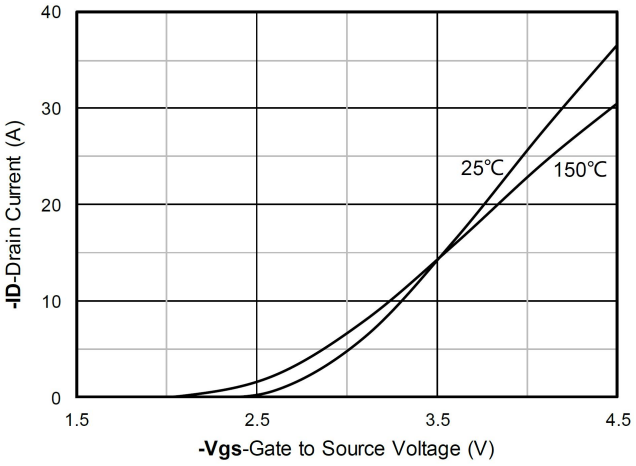
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	VGS=0V , ID=-250μA	-60	-	-	V
Drain-Source Leakage Current	I_{DSS}	VDS=-48V , VGS=0V	-	-	-1	uA
Gate-Source Leakage Current	I_{GSS}	VGS=±20V , VDS=0V	-	-	±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	VDS=VGS , ID=-250μA	-1.0	-1.5	-2.2	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	VGS=-10V , ID =-3A	-	90	120	mΩ
		VGS=-4.5V , ID =-2.5A	-	110	140	
Dynamic characteristics						
Input Capacitance	C_{iss}	VDS=-30V , VGS=0V , f=1MHz	-	960	-	pF
Output Capacitance	C_{oss}		-	87	-	
Reverse Transfer Capacitance	C_{rss}		-	38	-	
Total Gate Charge	Q_g	VDS=-30V , VGS=-10V , ID=-4A	-	15.7	-	nC
Gate-Source Charge	Q_{gs}		-	3	-	
Gate-Drain Charge	Q_{gd}		-	3.5	-	
Switching Characteristics						
Turn-On Delay Time	$t_{d(on)}$	VDD=-30V VGS=-10V , RG=3Ω , ID=-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	-	
Source-Drain Diode characteristics						
Diode Forward Voltage	V_{SD}	VGS=0V , IS=-1A , TJ=25℃	-	-	-1.2	V

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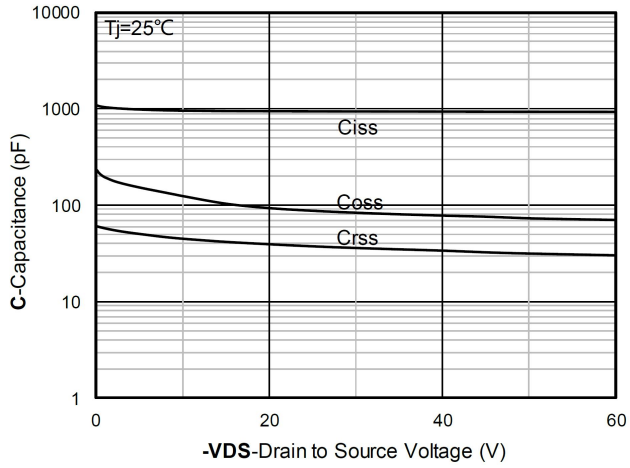
Typical Characteristics



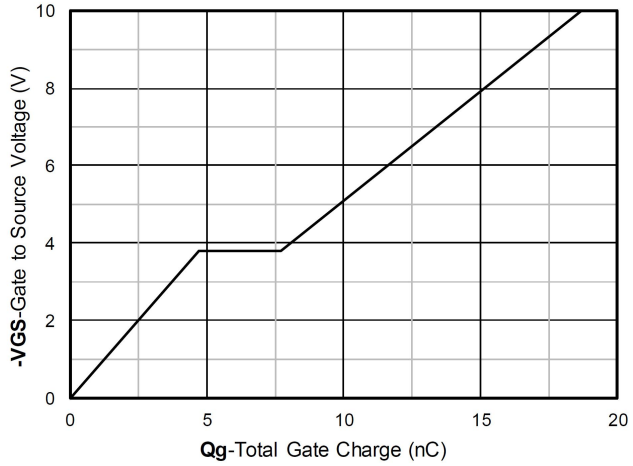
Output Characteristics



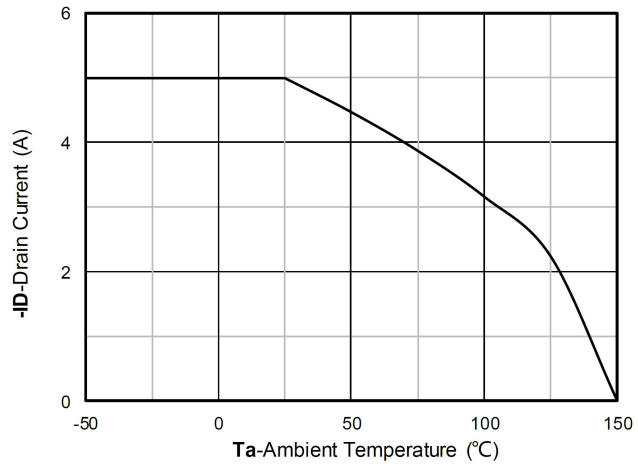
Transfer Characteristics



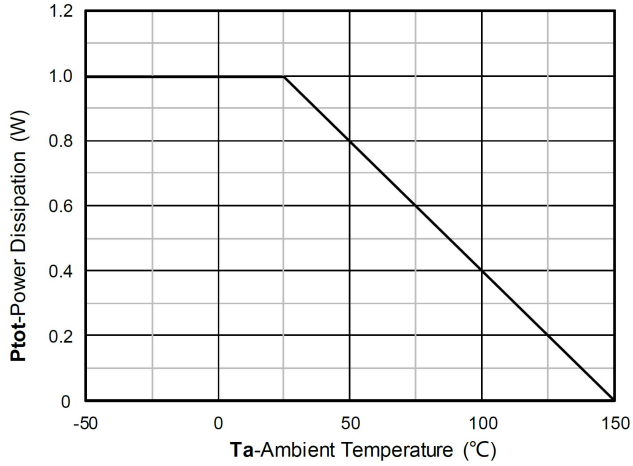
Capacitance Characteristics



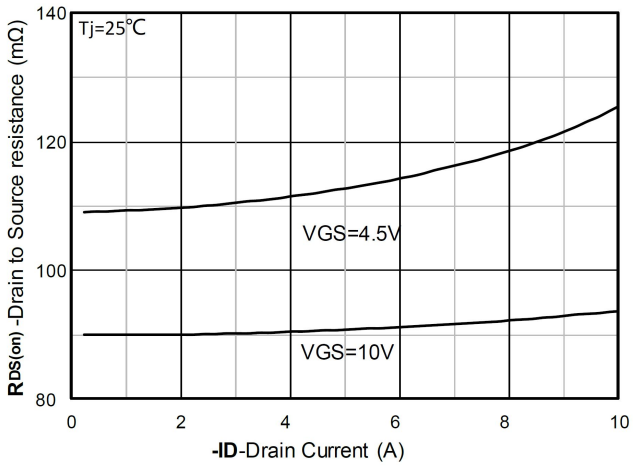
Gate Charge



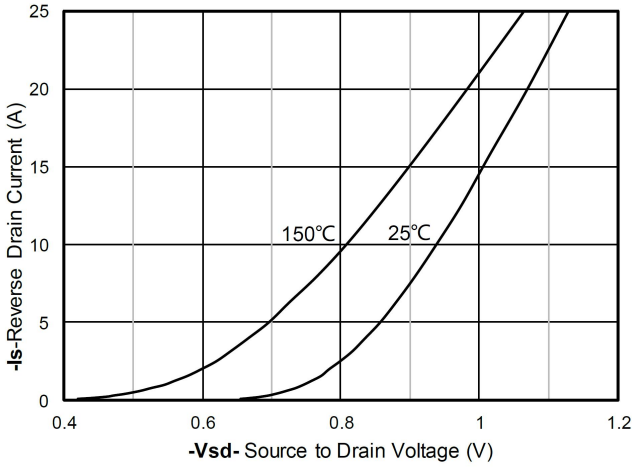
Current dissipation



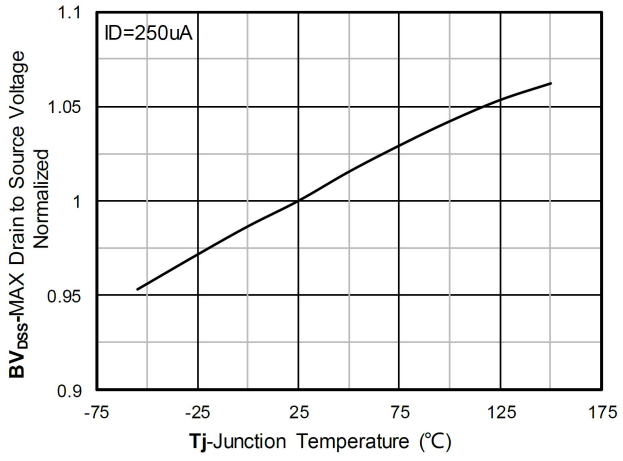
Power dissipation



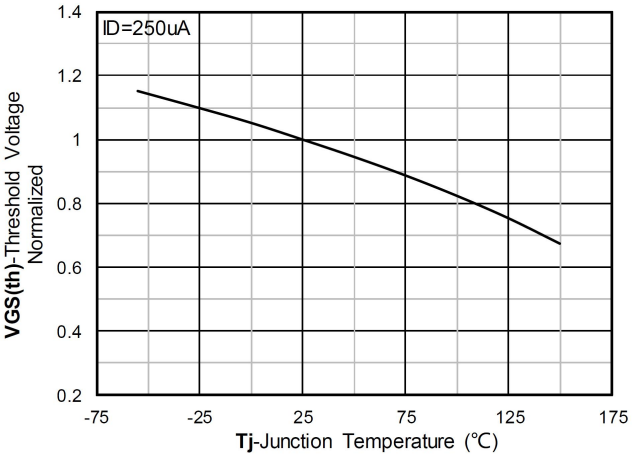
RDS(on) VS Drain Current



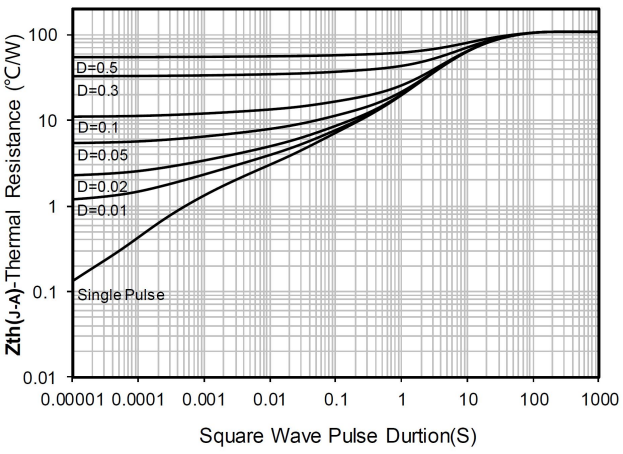
Forward characteristics of reverse diode



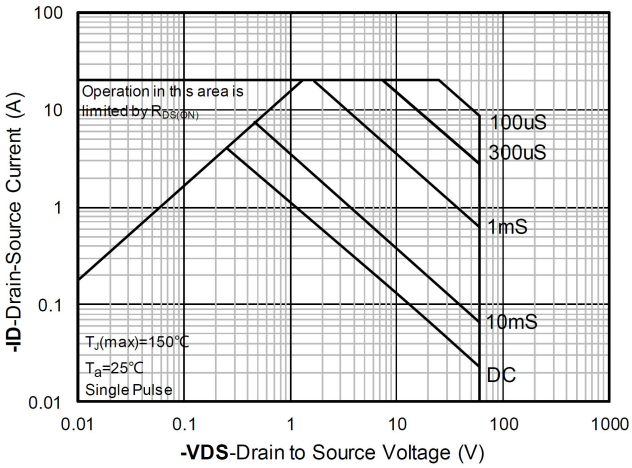
Normalized breakdown voltage



Normalized Threshold voltage

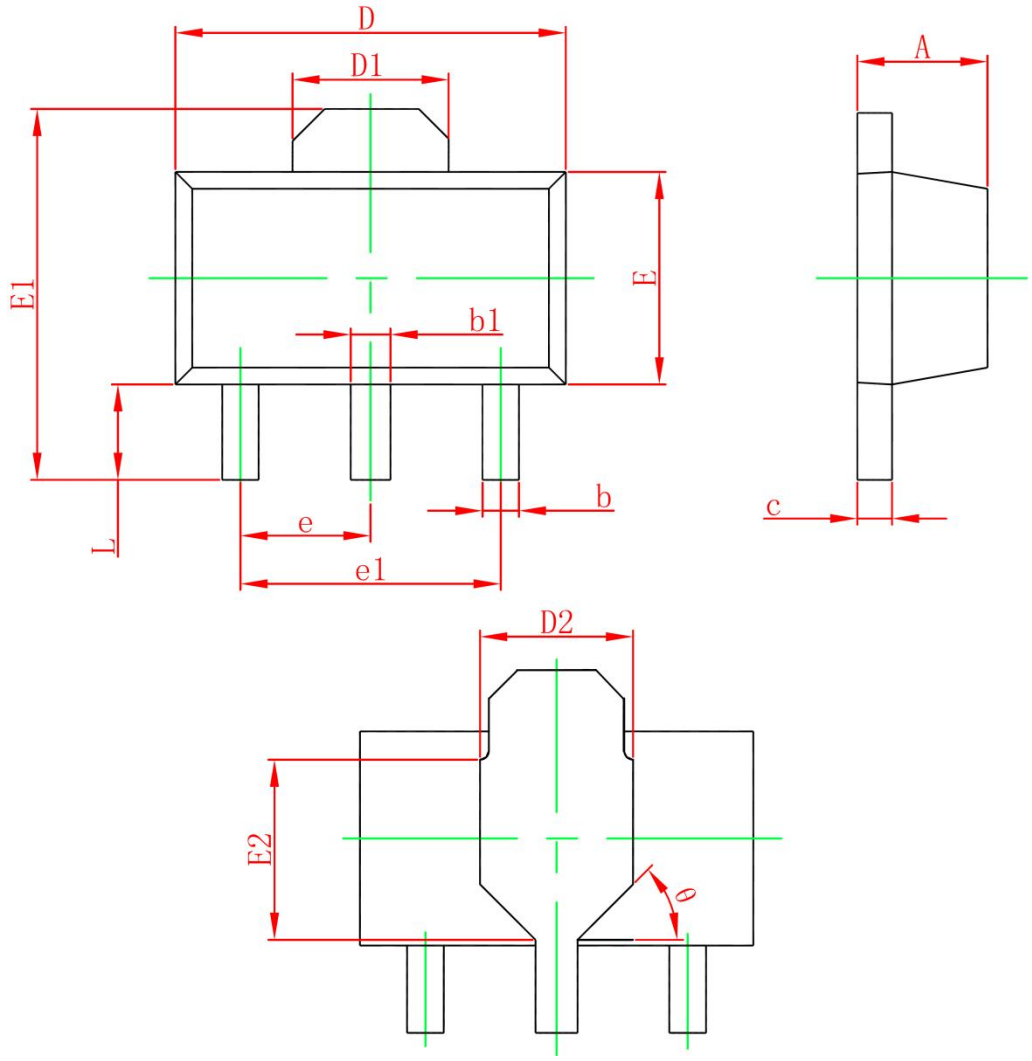


Maximum Transient Thermal Impedance



Safe Operation Area

SOT-89-3L Package Outline



Symbol	Dimensions In Millimeters	
	Min.	Max.
A	1.400	1.600
b	0.320	0.520
b1	0.400	0.580
c	0.350	0.440
D	4.400	4.600
D1	1.550 REF.	
D2	1.750 REF.	
E	2.300	2.600
E1	3.940	4.250
E2	1.900 REF.	
e	1.500 TYP.	
e1	3.000 TYP.	
L	0.900	1.200
θ	45°	

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