优尚

YOUSHANG SEMICONDUCTOR

设计研发新型功率器件

各类小信号开关

中低压及高压大电流等场效应管

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企业微信二维码

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Product Summary

BV_{DSS}	$R_{DS(ON)}$ (MAX)	I_D (MAX) $T_A = +25°C$
30V	190mΩ @ V_{GS} = 10V	1A
	335mΩ @ V_{GS} = 4.5V	0.75A

Description and Applications

This MOSFET is designed to meet the stringent requirements of automotive applications. It is qualified to AEC-Q101, supported by a PPAP and is ideal for use in:

- Motor Control
- DC-DC Converters
- Load Switch

Features and Benefits

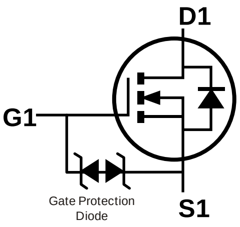
- Low On-Resistance
- Low Input Capacitance
- Fast Switching Speed
- ESD Protected Gate

Mechanical Data

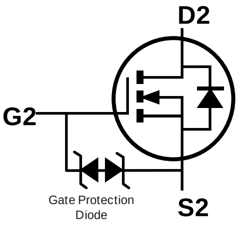
- Case: SOT363
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminal Connections Indicator: See Diagram
- Terminals: Finish — Matte Tin Annealed over Alloy 42 Leadframe. Solderable per MIL-STD-202, Method 208 ⓔ3
- Weight: 0.006 grams (Approximate)

ESD PROTECTED

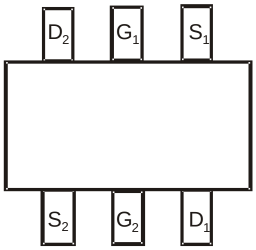
Top View



Q1 N-Channel



Q2 N-Channel



Top View Pin Out

Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

Characteristic			Symbol	Value	Unit
Drain-Source Voltage			V_{DSS}	30	V
Gate-Source Voltage			V_{GSS}	±20	V
Continuous Drain Current (Note 7) V_{GS} = 10V	Steady State	T_A = +25°C T_A = +70°C	I_D	1000 900	mA
	t < 5s	T_A = +25°C T_A = +70°C	I_D	1300 1000	mA
Maximum Continuous Body Diode Forward Current (Note 6)			I_S	0.5	A
Pulsed Drain Current (10µs Pulse, Duty Cycle = 1%)			I_{DM}	2.0	A

Thermal Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic		Symbol	Value	Unit
Total Power Dissipation (Note 6)	T_A = +25°C	P_D	0.32	W
	T_A = +70°C		0.19	
Thermal Resistance, Junction to Ambient (Note 6)	Steady State	$R_{\theta JA}$	395	°C/W
	t < 5s		320	
Total Power Dissipation (Note 7)	T_A = +25°C	P_D	0.4	W
	T_A = +70°C		0.25	
Thermal Resistance, Junction to Ambient (Note 7)	Steady State	$R_{\theta JA}$	320	°C/W
	t < 5s		250	
Thermal Resistance, Junction to Case		$R_{\theta JC}$	143	
Operating and Storage Temperature Range		T_J, T_{STG}	-55 to +150	°C

Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 8)						
Drain-Source Breakdown Voltage	BV_{DSS}	30	—	—	V	V_{GS} = 0V, I_D = 1mA
Zero Gate Voltage Drain Current @T_C = +25°C	I_{DSS}	—	—	1	µA	V_{DS} = 30V, V_{GS} = 0V
Gate-Source Leakage	I_{GSS}	—	—	±10	µA	V_{GS} = ±20V, V_{DS} = 0V
ON CHARACTERISTICS (Note 8)						
Gate Threshold Voltage	$V_{GS(TH)}$	1.5	—	2.8	V	V_{DS} = V_{GS}, I_D = 250µA
Static Drain-Source On-Resistance	$R_{DS(ON)}$	—	122	190	mΩ	V_{GS} = 10V, I_D = 1.3A
		—	181	335		V_{GS} = 4.5V, I_D = 290mA
Forward Transfer Admittance	$\lvert Y_{fs} \rvert$	—	0.7	—	mS	V_{DS} = 10V, I_D = 250mA
Diode Forward Voltage	V_{SD}	—	—	1.2	V	V_{GS} = 0V, I_S = 250mA
DYNAMIC CHARACTERISTICS (Note 9)						
Input Capacitance	C_{iss}	—	87	—	pF	V_{DS} = 20V, V_{GS} = 0V, f = 1.0MHz
Output Capacitance	C_{oss}	—	17	—	pF	
Reverse Transfer Capacitance	C_{rss}	—	12	—	pF	
Gate Resistance	R_g	—	69.8	—	Ω	f = 1MHz , V_{GS} = 0V, V_{DS} = 0V
Total Gate Charge (V_{GS} = 4.5V)	Q_g	—	0.9	—	nC	V_{DS} = 10V, I_D = 250mA
Total Gate Charge (V_{GS} = 10V)	Q_g	—	2.0	—	nC	
Gate-Source Charge	Q_{gs}	—	0.3	—	nC	
Gate-Drain Charge	Q_{gd}	—	0.3	—	nC	
Turn-On Delay Time	$t_{D(ON)}$	—	4.5	—	ns	V_{DD} = 30V, V_{GS} = 10V, R_G = 10Ω, I_D = 100mA
Turn-On Rise Time	t_R	—	8.9	—	ns	
Turn-Off Delay Time	$t_{D(OFF)}$	—	30.3	—	ns	
Turn-Off Fall Time	t_F	—	15.6	—	ns	

Notes:
6. Device mounted on FR-4 PCB, with minimum recommended pad layout.
7. Device mounted on 1” x 1” FR-4 PCB with high coverage 2oz. Copper, single sided.
8. Short duration pulse test used to minimize self-heating effect.
9. Guaranteed by design. Not subject to product testing.

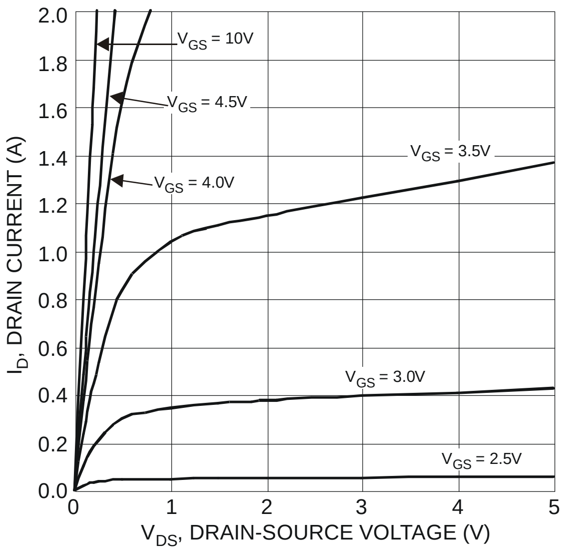


Figure 1 Typical Output Characteristic

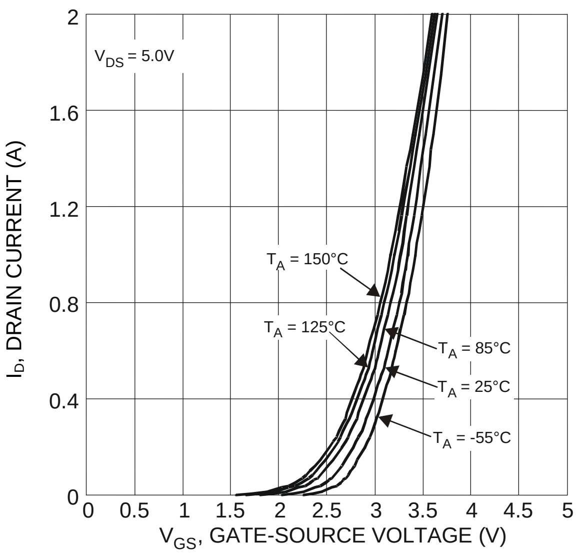


Figure 2 Typical Transfer Characteristics

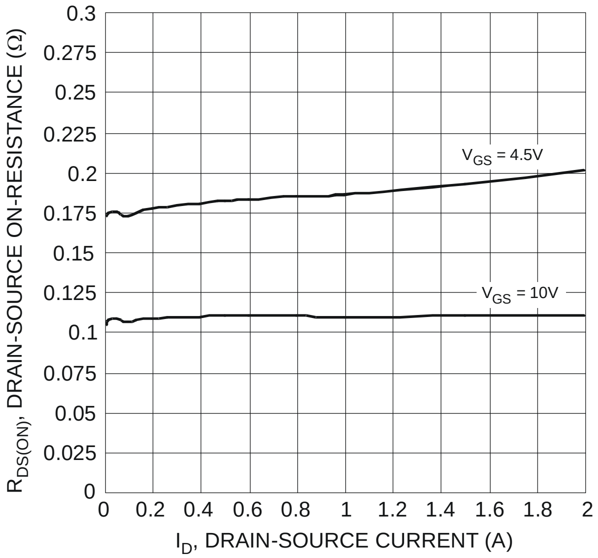


Figure 3 Typical On-Resistance vs.
Drain Current and Gate Voltage

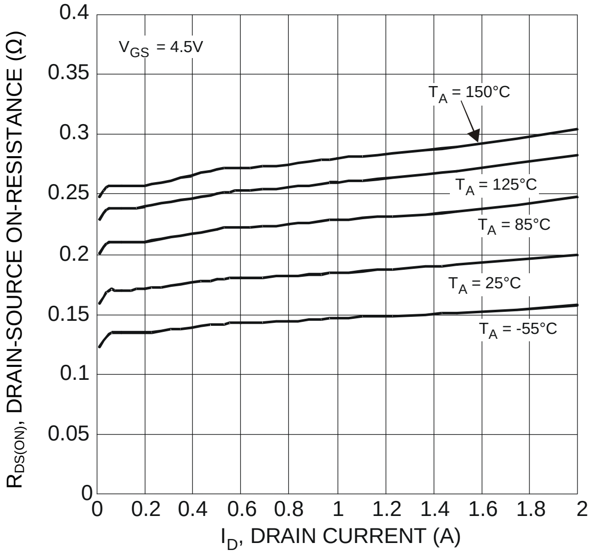


Figure 4 Typical On-Resistance vs.
Drain Current and Temperature

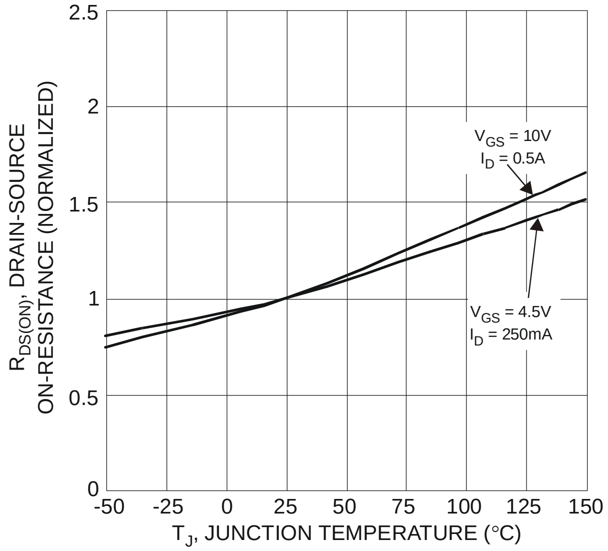


Figure 5 On-Resistance Variation with Temperature

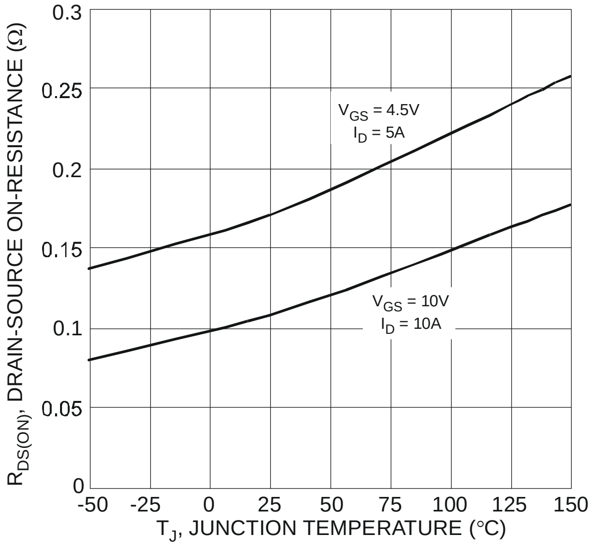


Figure 6 On-Resistance Variation with Temperature

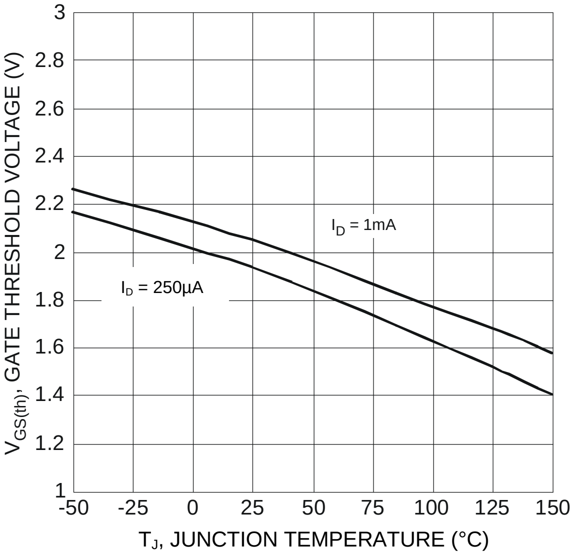


Figure 7 Gate Threshold Variation vs. Junction Temperature

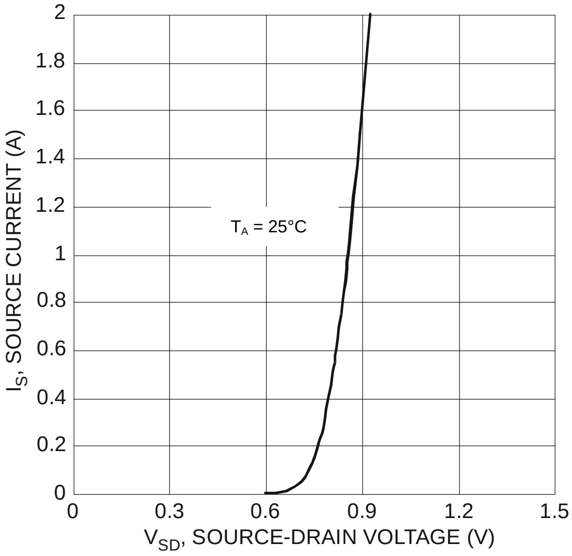


Figure 8 Diode Forward Voltage vs. Current

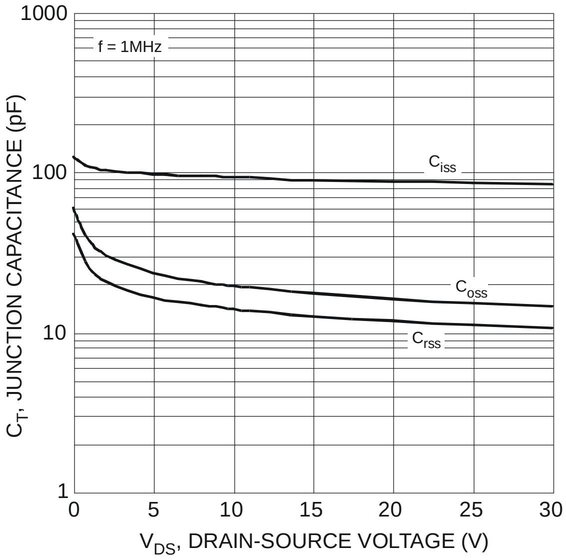


Figure 9 Typical Junction Capacitance

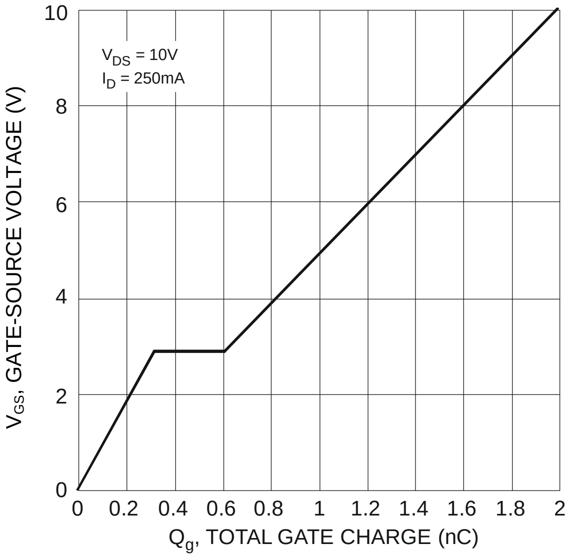
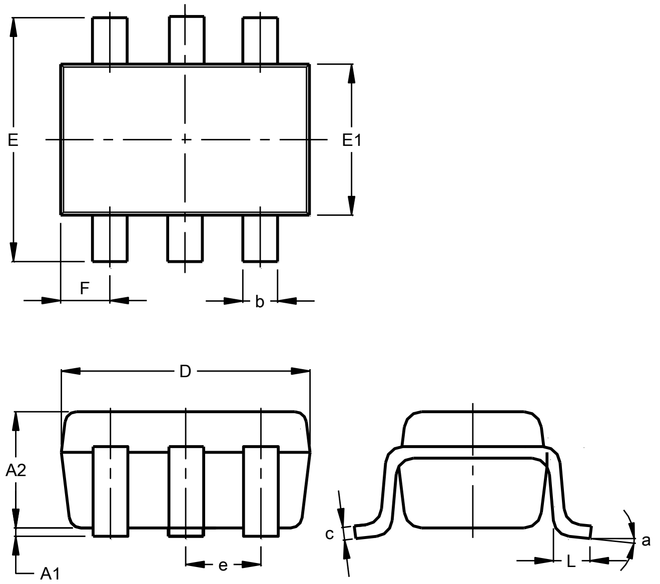


Figure 10 Gate Charge

Package Outline Dimensions

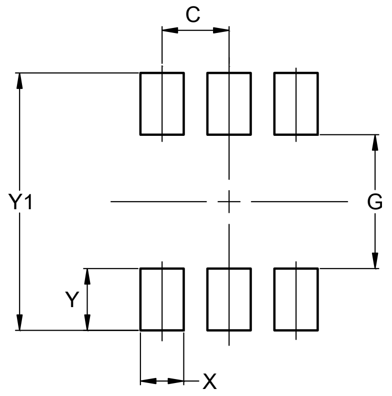
SOT363



SOT363			
Dim	**Min**	**Max**	**Typ**
A1	0.00	0.10	0.05
A2	0.90	1.00	0.95
b	0.10	0.30	0.25
c	0.10	0.22	0.11
D	1.80	2.20	2.15
E	2.00	2.20	2.10
E1	1.15	1.35	1.30
e	0.650 BSC		
F	0.40	0.45	0.425
L	0.25	0.40	0.30
a	0°	8°	--
All Dimensions in mm			

Suggested Pad Layout

SOT363



Dimensions	**Value (in mm)**
C	0.650
G	1.300
X	0.420
Y	0.600
Y1	2.500