



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)	Package	I _D (MAX) T _A = +25°C
30V	190mΩ @ V _{GS} = 10V	SOT363	1A
	335mΩ @ V _{GS} = 4.5V		0.75A

Features and Benefits

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

Description

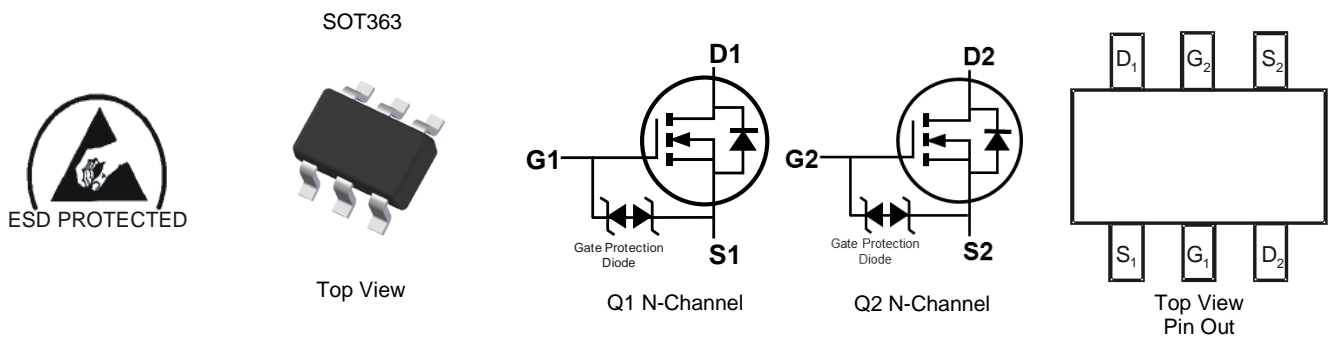
This MOSFET has been designed to minimize the on-state resistance (R_{DS(ON)}) and yet maintain superior switching performance, making it ideal for high efficiency power management applications.

Applications

- Motor Control
- Power Management Functions
- Load Switch

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 **(e3)**
- Weight: 0.006 grams (Approximate)



Maximum Ratings (@ $T_A = +25^\circ\text{C}$, 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 6) $V_{GS} = 10\text{V}$	Steady State	$T_A = +25^\circ\text{C}$ $T_A = +70^\circ\text{C}$	I_D	1000 900	mA
	$t < 5\text{s}$	$T_A = +25^\circ\text{C}$ $T_A = +70^\circ\text{C}$	I_D	1300 1000	mA
Maximum Continuous Body Diode Forward Current (Note 5)			I_S	0.5	A
Pulsed Drain Current (10 μs Pulse, Duty Cycle = 1%)			I_{DM}	9.6	A

Thermal Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

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

Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 7)						
Drain-Source Breakdown Voltage	BV_{DSS}	30	—	—	V	$V_{GS} = 0\text{V}, I_D = 1\text{mA}$
Zero Gate Voltage Drain Current	I_{DSS}	—	—	1	μA	$V_{DS} = 30\text{V}, V_{GS} = 0\text{V}$
Gate-Source Leakage	I_{GSS}	—	—	± 10	μA	$V_{GS} = \pm 20\text{V}, V_{DS} = 0\text{V}$
ON CHARACTERISTICS (Note 7)						
Gate Threshold Voltage	$V_{GS(TH)}$	1.5	—	2.8	V	$V_{DS} = V_{GS}, I_D = 250\mu\text{A}$
Static Drain-Source On-Resistance	$R_{DS(ON)}$	—	122	190	m Ω	$V_{GS} = 10\text{V}, I_D = 1.3\text{A}$
		—	181	335		$V_{GS} = 4.5\text{V}, I_D = 290\text{mA}$
Diode Forward Voltage	V_{SD}	—	—	1.2	V	$V_{GS} = 0\text{V}, I_S = 250\text{mA}$
DYNAMIC CHARACTERISTICS (Note 8)						
Input Capacitance	C_{iss}	—	87	—	pF	$V_{DS} = 20\text{V}, V_{GS} = 0\text{V},$ $f = 1.0\text{MHz}$
Output Capacitance	C_{oss}	—	17	—	pF	
Reverse Transfer Capacitance	C_{rss}	—	12	—	pF	
Gate Resistance	R_g	—	69.8	—	Ω	$f = 1\text{MHz}, V_{GS} = 0\text{V}, V_{DS} = 0\text{V}$
Total Gate Charge ($V_{GS} = 4.5\text{V}$)	Q_g	—	0.9	—	nC	$V_{DS} = 10\text{V}, I_D = 250\text{mA}$
Total Gate Charge ($V_{GS} = 10\text{V}$)	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	$V_{DD} = 30\text{V}, V_{GS} = 10\text{V},$ $R_G = 10\Omega, I_D = 100\text{mA}$
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:
- Device mounted on FR-4 PCB, with minimum recommended pad layout.
 - Device mounted on 1" \times 1" FR-4 PCB with high coverage 2oz. Copper, single sided.
 - Short duration pulse test used to minimize self-heating effect.
 - Guaranteed by design. Not subject to product testing.

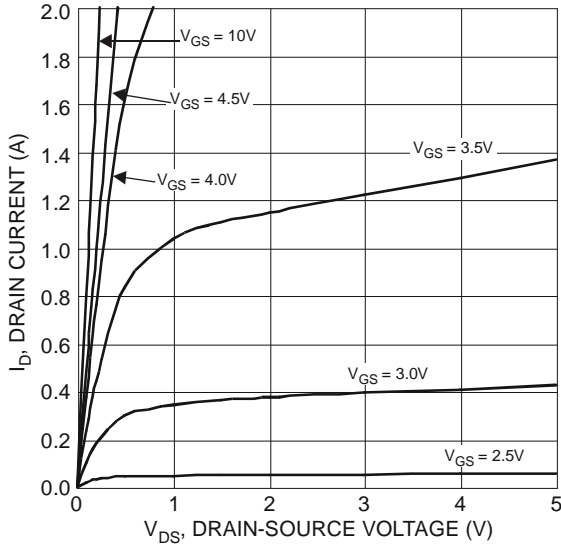


Figure 1 Typical Output Characteristic

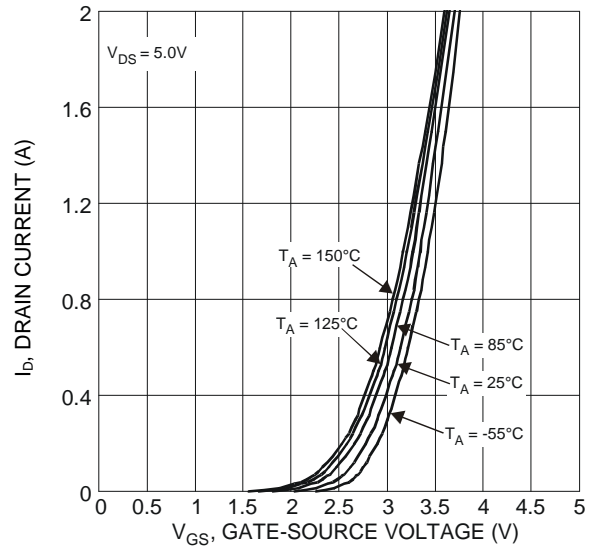


Figure 2 Typical Transfer Characteristics

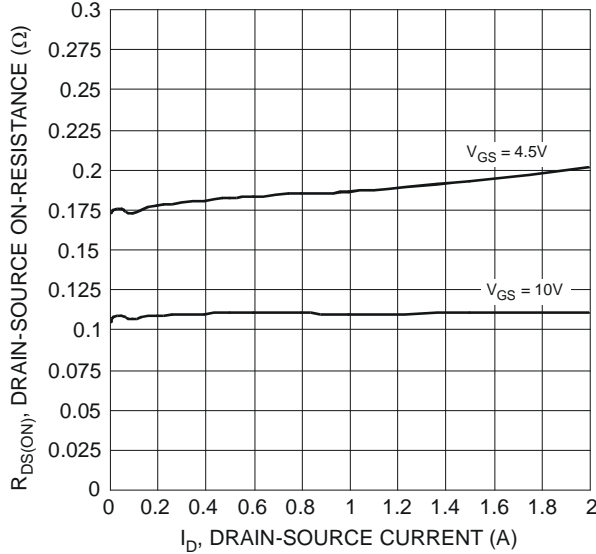


Figure 3 Typical On-Resistance vs. Drain Current and Gate Voltage

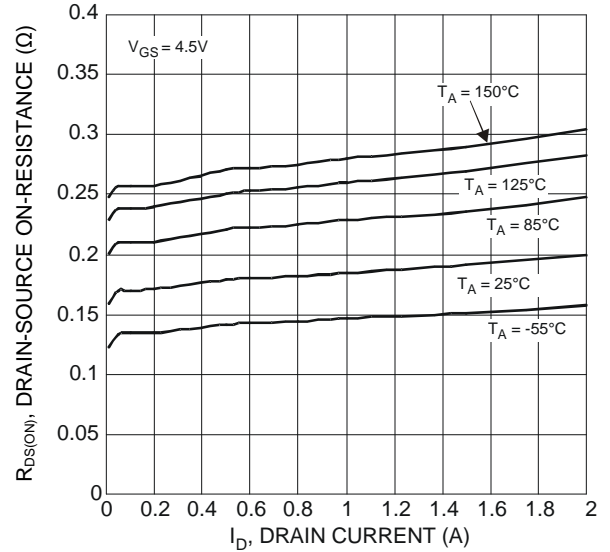


Figure 4 Typical On-Resistance vs. Drain Current and Temperature

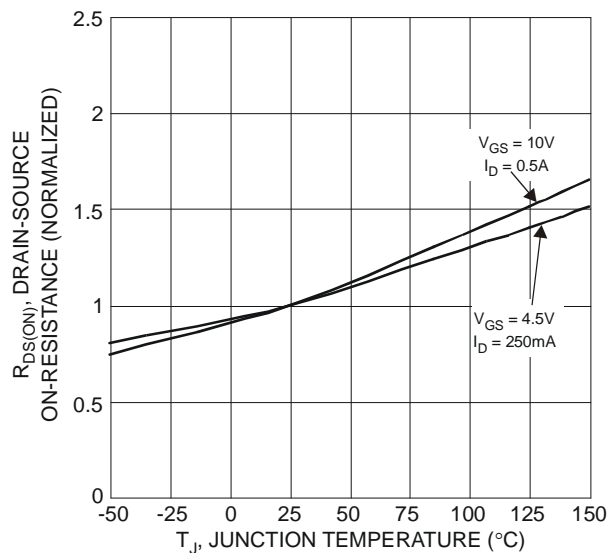


Figure 5 On-Resistance Variation with Temperature

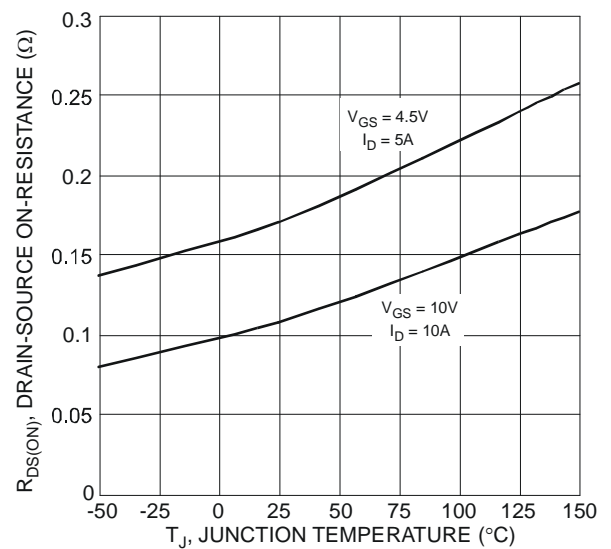


Figure 6 On-Resistance Variation with Temperature

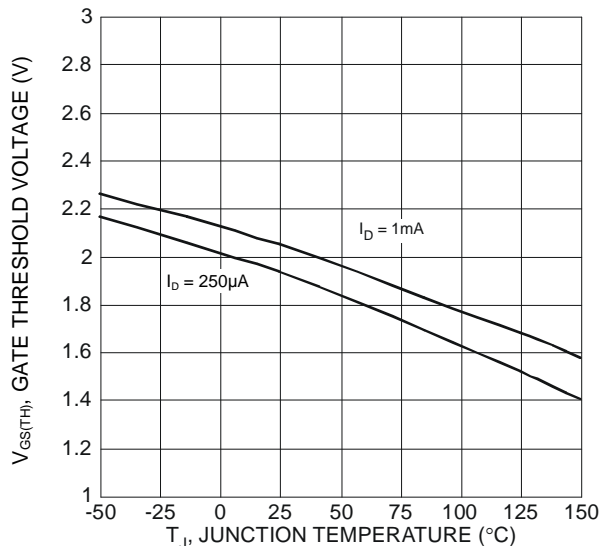


Figure 7 Gate Threshold Variation vs. Junction Temperature

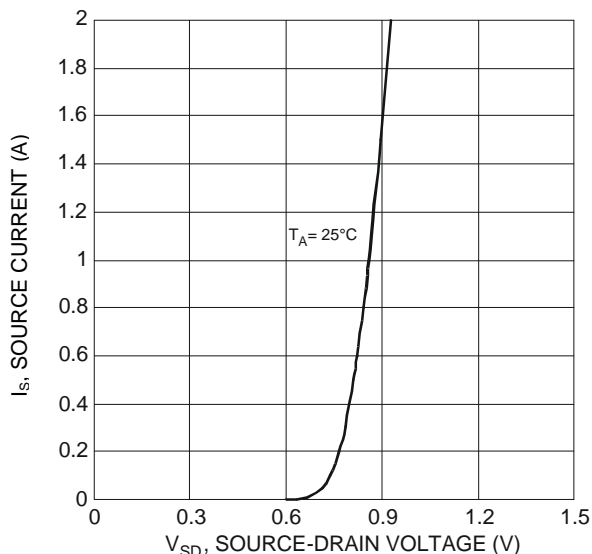


Figure 8 Diode Forward Voltage vs. Current

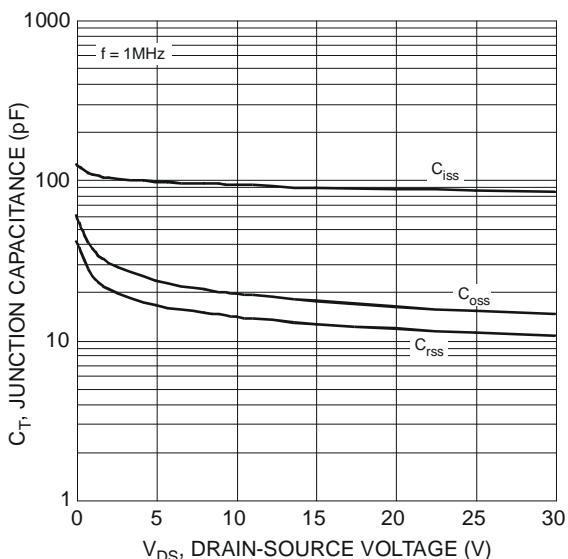


Figure 9 Typical Junction Capacitance

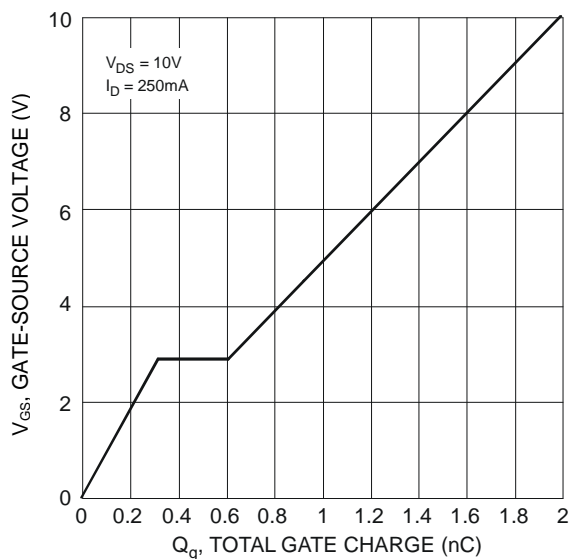


Figure 10 Gate Charge

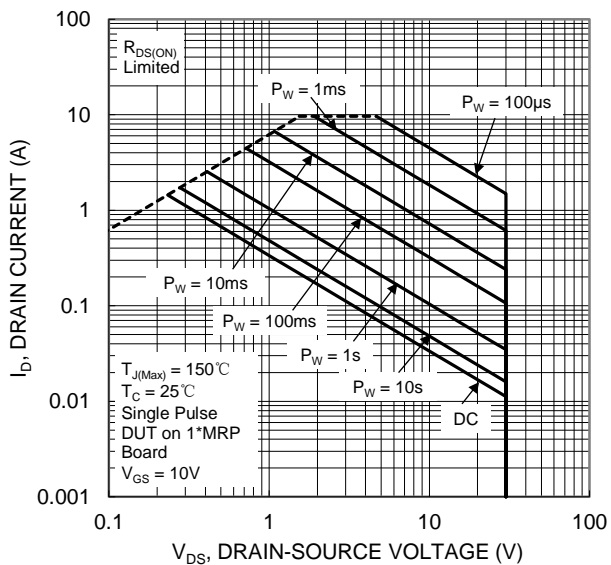
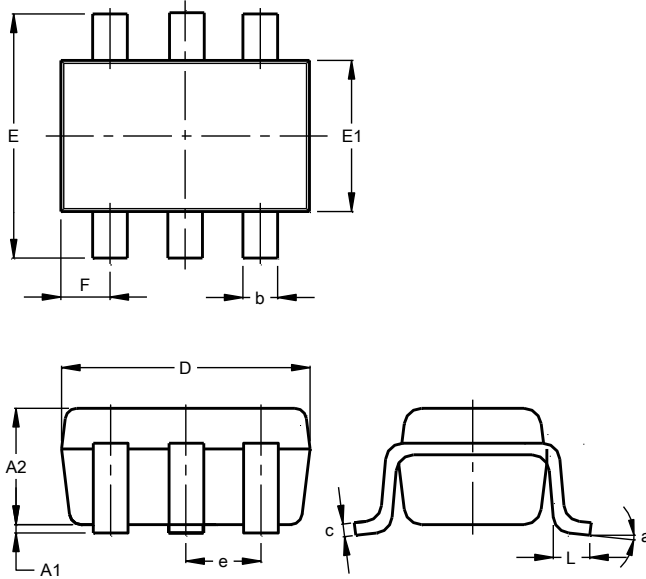


Figure 11 SOA, Safe Operation Area

Package Outline Dimensions

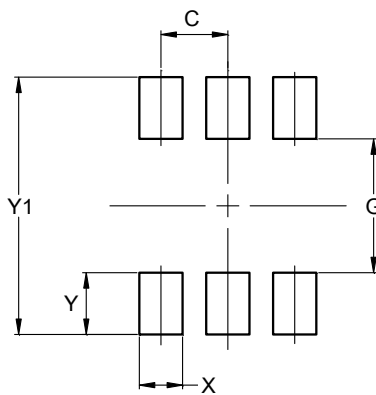
SOT363



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