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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Product Summary

BV_{DSS}	$R_{DS(ON)}$ max	I_D max T_A = +25°C
-25V	10Ω @ V_{GS} = -4.5V	-150mA
	13Ω @ V_{GS} = -2.7V	-140mA

Features and Benefits

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

Description

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

Applications

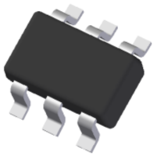
- General Purpose Interfacing Switch
- Power Management Functions
- Analog Switch

Mechanical Data

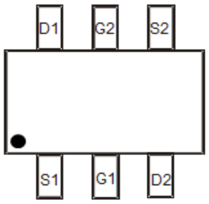
- Case: SOT363
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish Annealed over Alloy 42 Leadframe (Lead Free Plating). Solderable per MIL-STD-202, Method 208 ⓔ3
- Terminal Connections: See Diagram
-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

ESD Protected

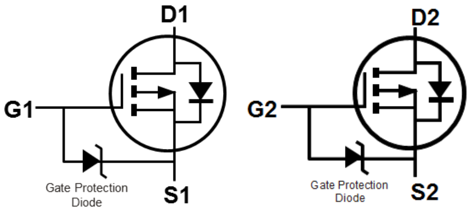
SOT363



Top View



Top View



Equivalent Circuit

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

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	P_D	310	mW
Thermal Resistance, Junction to Ambient (Note 5)	$R_{\theta JA}$	407	°C/W
Power Dissipation (Note 6)	P_D	380	mW
Thermal Resistance, Junction to Ambient (Note 6)	$R_{\theta JA}$	326	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

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

Characteristic			Symbol	Value	Unit
Drain-Source Voltage			V_{DSS}	-25	V
Gate-Source Voltage		Continuous	V_{GSS}	±8	V
Continuous Drain Current (Note 6) V_{GS} = -4.5V	Steady State	T_A = +25°C T_A = +70°C	I_D	-150 -120	mA
Continuous Drain Current (Note 6) V_{GS} = -2.7V	Steady State	T_A = +25°C T_A = +70°C	I_D	-140 -110	mA

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 7)						
Drain-Source Breakdown Voltage	BV_{DSS}	-25	—	—	V	V_{GS} = 0V, I_D = -250μA
Zero Gate Voltage Drain Current	I_{DSS}	—	—	-1.0	μA	V_{DS} = -20V, V_{GS} = 0V
Gate-Body Leakage	I_{GSS}	—	—	-100	nA	V_{GS} = -8V, V_{DS} = 0V
ON CHARACTERISTICS (Note 7)						
Gate Threshold Voltage	$V_{GS(TH)}$	-0.65	—	-1.5	V	V_{DS} = V_{GS}, I_D = -250μA
Static Drain-Source On-Resistance	$R_{DS(ON)}$	—	2	10	Ω	V_{GS} = -4.5V, I_D = -0.14A
		—	2.7	13	Ω	V_{GS} = -2.7V, I_D = -0.05A
Diode Forward Voltage	V_{SD}	—	-0.8	-1.2	V	V_{DS} = V_{GS}, I_D = -0.2A
DYNAMIC CHARACTERISTICS (Note 8)						
Input Capacitance	C_{iss}	—	30.7	—	pF	V_{DS} = -10V, V_{GS} = 0V f = 1.0MHz
Output Capacitance	C_{oss}	—	5.9	—		
Reverse Transfer Capacitance	C_{rss}	—	1.5	—		
Total Gate Charge	Q_g	—	0.34	—	nC	V_{DS} = -5V, I_D = -0.2A, V_{GS} = -4.5V
Gate-Source Charge	Q_{gs}	—	0.06	—		
Gate-Drain Charge	Q_{gd}	—	0.08	—		
Turn-On Delay Time	$t_{D(ON)}$	—	3.3	—	ns	V_{GS} = -4.5V, V_{DD} = -6V I_D = -0.2A, R_G = 50Ω
Turn-On Rise Time	t_R	—	2.0	—		
Turn-Off Delay Time	$t_{D(OFF)}$	—	16.3	—		
Turn-Off Fall Time	t_F	—	7.9	—		

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

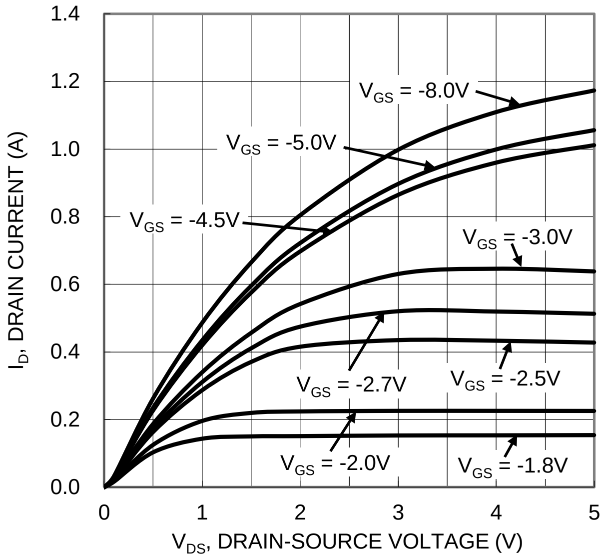


Figure 1. Typical Output Characteristic

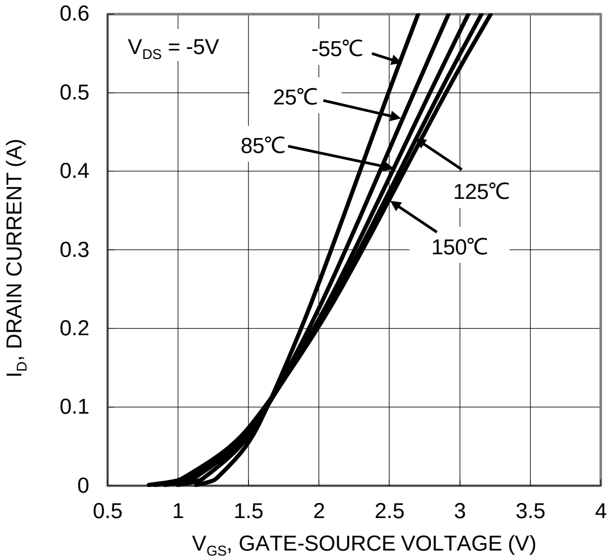


Figure 2. Typical Transfer Characteristic

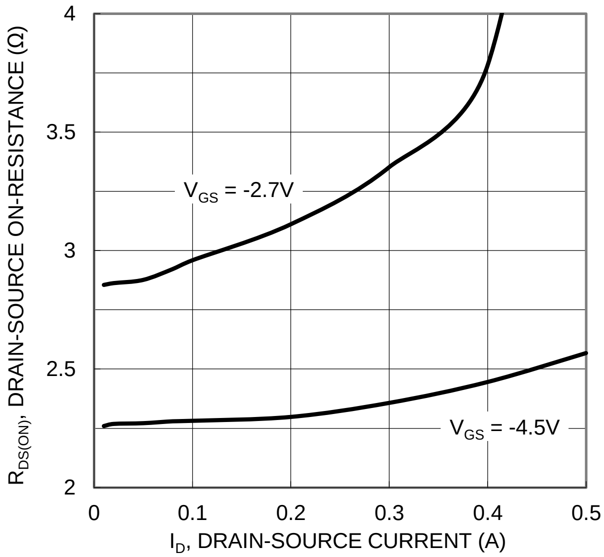


Figure 3. Typical On-Resistance vs. Drain Current and Gate Voltage

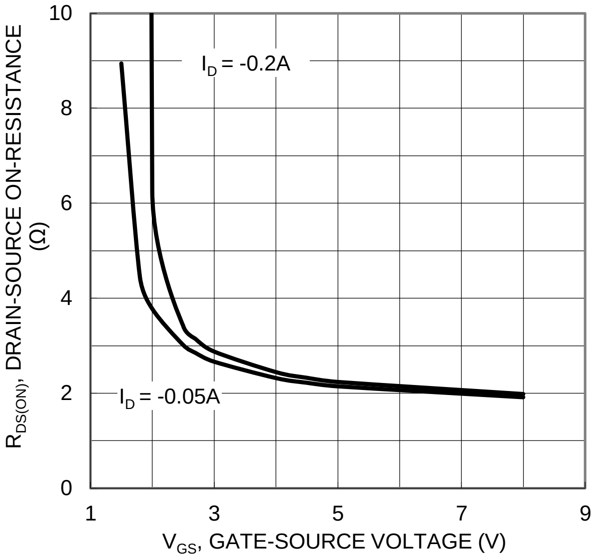


Figure 4. Typical Transfer Characteristic

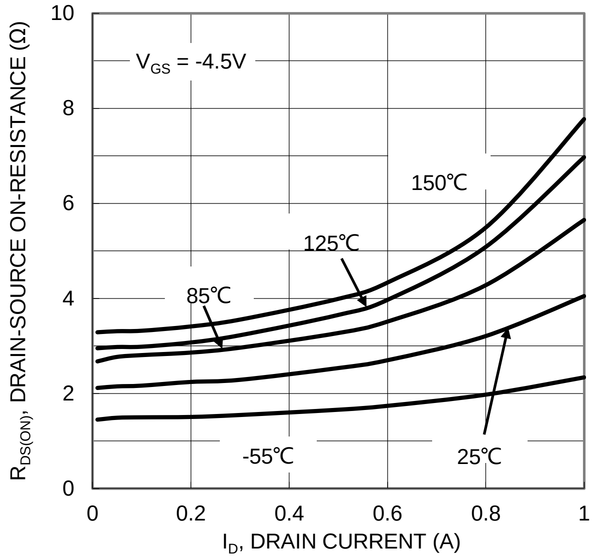


Figure 5. Typical On-Resistance vs. Drain Current and Temperature

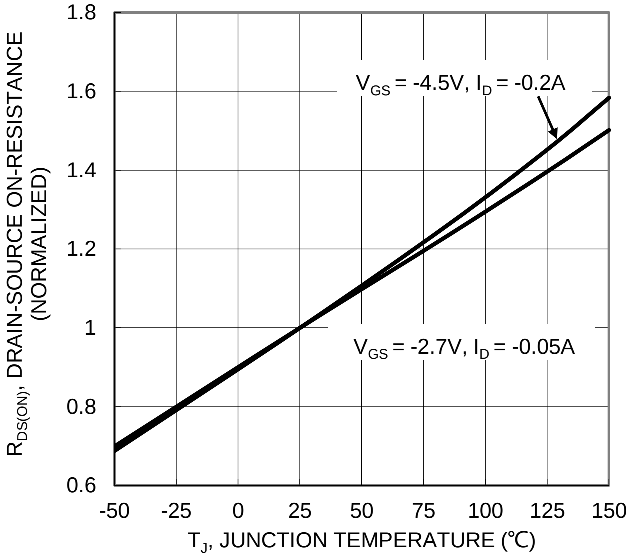


Figure 6. On-Resistance Variation with Temperature

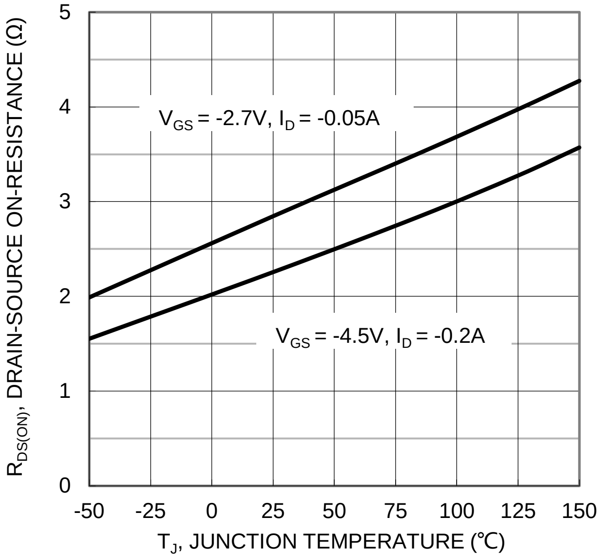


Figure 7. On-Resistance Variation with Temperature

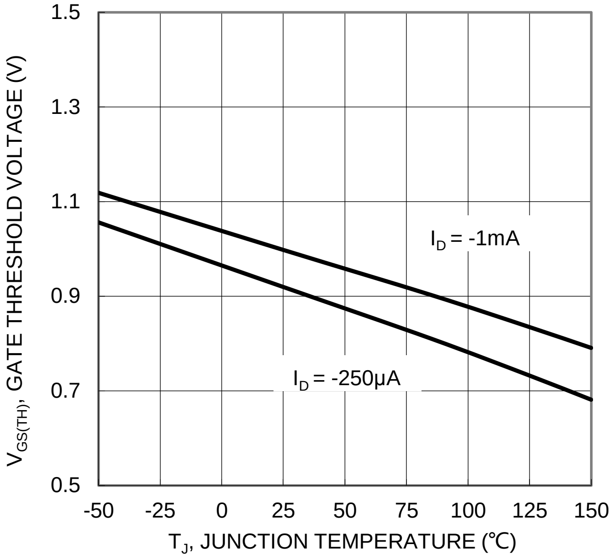


Figure 8. Gate Threshold Variation vs. Junction Temperature

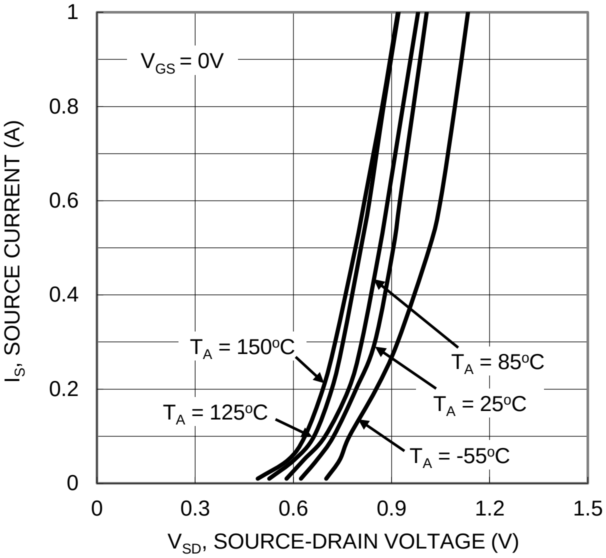


Figure 9. Diode Forward Voltage vs. Current

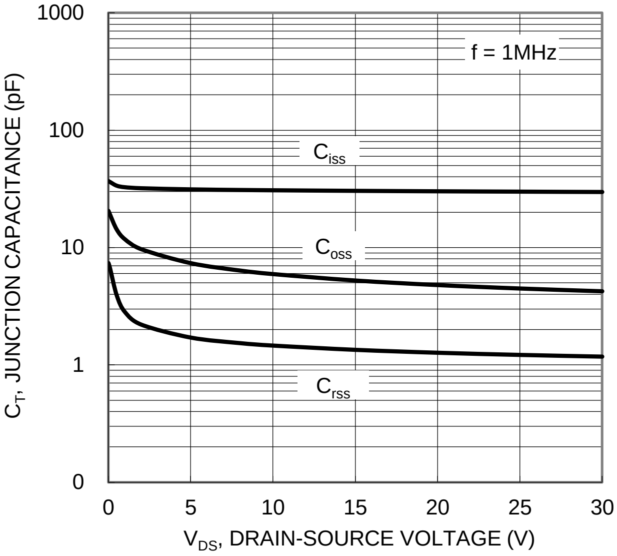


Figure 10. Typical Junction Capacitance

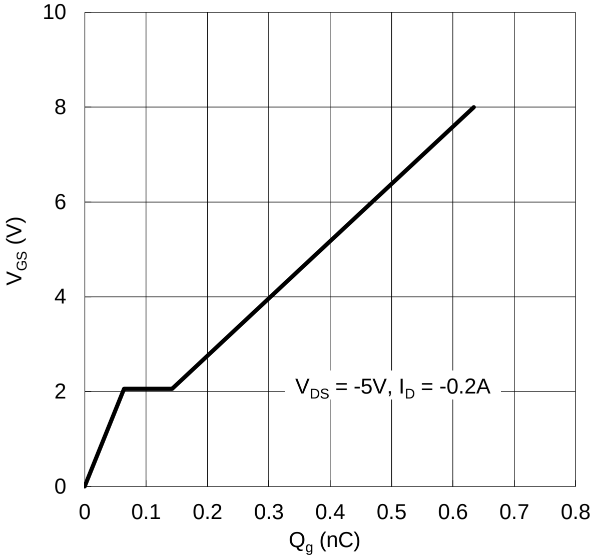


Figure 11. Gate Charge

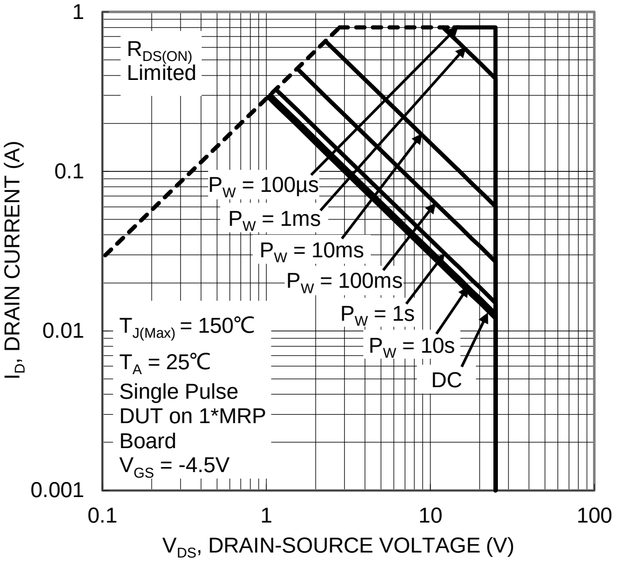


Figure 12. SOA, Safe Operation Area

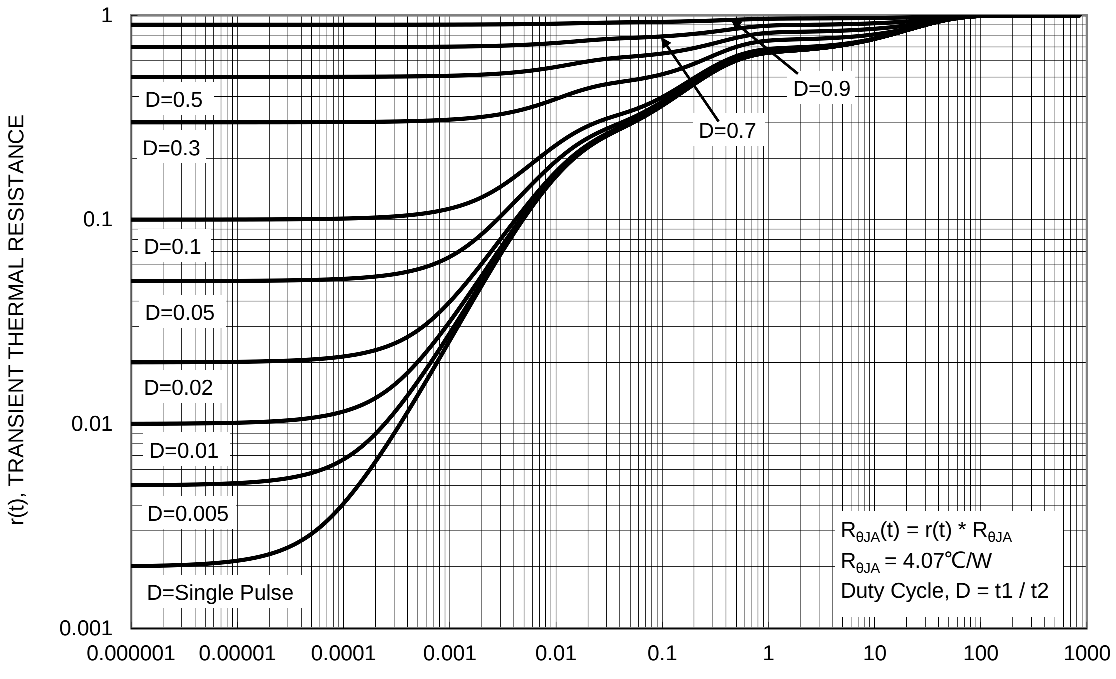
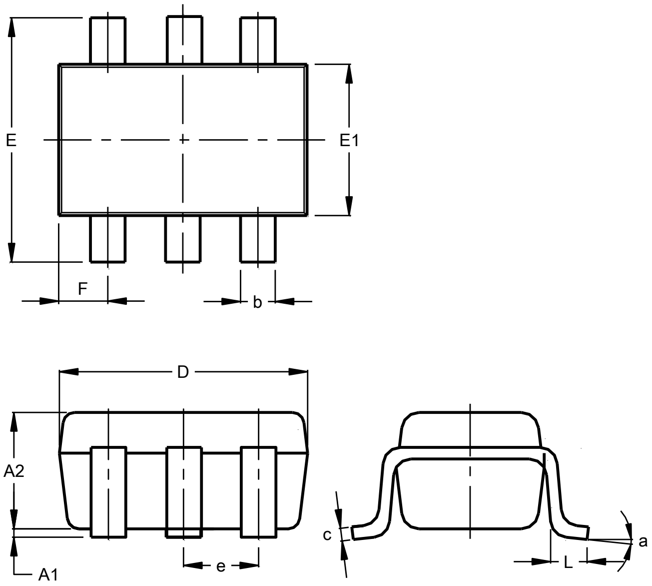


Figure 13. Transient Thermal Resistance

Package Outline Dimensions

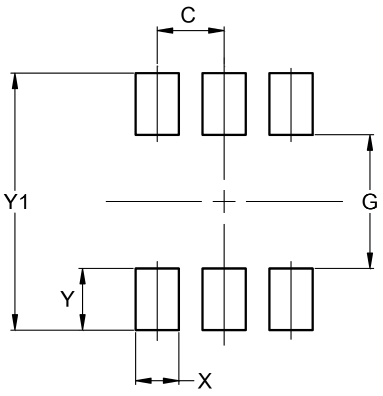
SOT363



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