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_C = +25°C
-60V	105mΩ @ V_{GS} = -10V	-7.3A
	130mΩ @ V_{GS} = -4.5V	-6.5A

Features and Benefits

- Low On-Resistance
- Low Input Capacitance
-

Description and Applications

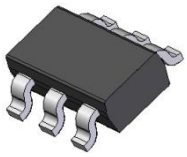
This MOSFET is designed to meet the stringent requirements of automotive applications. It is qualified to AEC-Q101, supported by a PPAP and is ideal for use in:

- Backlighting
- Power Management Functions
- DC-DC Converters

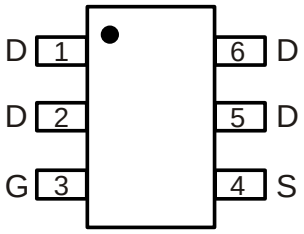
Mechanical Data

- Case: TSOT26
- 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 Copper Leadframe. Solderable per MIL-STD-202, Method 208 e3
- Weight: 0.008 grams (Approximate)

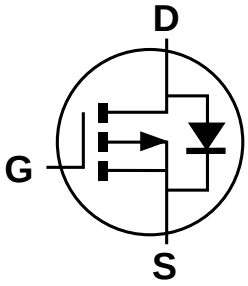
TSOT26



Top View



Device Schematic



Equivalent Circuit

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

Characteristic		Symbol	Value	Unit
Drain-Source Voltage		V_{DSS}	-60	V
Gate-Source Voltage		V_{GSS}	±20	V
Continuous Drain Current (Note 7) V_{GS} = -10V	T_C = +25°C T_C = +70°C	I_D	-7.3 -5.8	A
Maximum Body Diode Forward Current (Note 7)		I_S	-1.8	A
Pulsed Drain Current (380μs Pulse, 1% Duty Cycle)		I_{DM}	-24	A
Pulsed Source Current (380μs Pulse, 1% Duty Cycle)		I_{SM}	-24	A
Avalanche Current (Note 7) L = 0.1mH		I_{AS}	-19	A
Repetitive Avalanche Energy (Note 7) L = 0.1mH		E_{AS}	18	mJ

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

Characteristic		Symbol	Value	Unit
Total Power Dissipation (Note 6)	T_A = +25°C	P_D	1.2	W
	T_A = +70°C		0.75	
Thermal Resistance, Junction to Ambient (Note 6)	Steady State	$R_{\theta JA}$	105	°C/W
	t<10s		60	°C/W
Total Power Dissipation (Note 7)	T_A = +25°C	P_D	1.8	W
	T_A = +70°C		1.1	
Thermal Resistance, Junction to Ambient (Note 7)	Steady State	$R_{\theta JA}$	69	°C/W
	t<10s		39	°C/W
Thermal Resistance, Junction to Case (Note 7)		$R_{\theta JC}$	15	°C/W
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}	-60	—	—	V	V_{GS} = 0V, I_D = -250μA
Zero Gate Voltage Drain Current	I_{DSS}	—	—	-1	μA	V_{DS} = -48V, V_{GS} = 0V
Gate-Source Leakage	I_{GSS}	—	—	-100	nA	V_{GS} = ±16V, V_{DS} = 0V
ON CHARACTERISTICS (Note 8)						
Gate Threshold Voltage	$V_{GS(TH)}$	-1	—	-3	V	V_{DS} = V_{GS}, I_D = -250μA
Static Drain-Source On-Resistance	$R_{DS(ON)}$	—	—	105	mΩ	V_{GS} = -10V, I_D = -4.5A
		—	—	130		V_{GS} = -4.5V, I_D = -3.5A
Diode Forward Voltage	V_{SD}	—	-0.7	-1.2	V	V_{GS} = 0V, I_S = -1A
DYNAMIC CHARACTERISTICS (Note 9)						
Input Capacitance	C_{ISS}	—	969	—	pF	V_{DS} = -30V, V_{GS} = 0V, f = 1.0MHz
Output Capacitance	C_{OSS}	—	57	—		
Reverse Transfer Capacitance	C_{RSS}	—	44	—		
Gate Resistance	R_G	—	13.7	—	Ω	V_{DS} = 0V, V_{GS} = 0V, f = 1.0MHz
Total Gate Charge (V_{GS} = -4.5V)	Q_G	—	8.2	—	nC	V_{DS} = -30V, I_D = -12A
Total Gate Charge (V_{GS} = -10V)	Q_G	—	17.2	—		
Gate-Source Charge	Q_{GS}	—	3.0	—		
Gate-Drain Charge	Q_{GD}	—	3.1	—		
Turn-On Delay Time	$t_{D(ON)}$	—	4.4	—	ns	V_{GS} = -10V, V_{DS} = -30V, R_{GEN} = 3Ω, I_D = -12A
Turn-On Rise Time	t_R	—	23	—		
Turn-Off Delay Time	$t_{D(OFF)}$	—	34	—		
Turn-Off Fall Time	t_F	—	42	—		
Body Diode Reverse Recovery Time	t_{RR}	—	13.2	—	ns	I_S = -12A, dI/dt = 100A/μs
Body Diode Reverse Recovery Charge	Q_{RR}	—	6.18	—	nC	

Notes: 6. Device mounted on FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout.
7. Device mounted on FR-4 substrate PC board, 2oz copper, with 1-inch square copper plate.
8. Short duration pulse test used to minimize self-heating effect.
9. Guaranteed by design. Not subject to product testing.

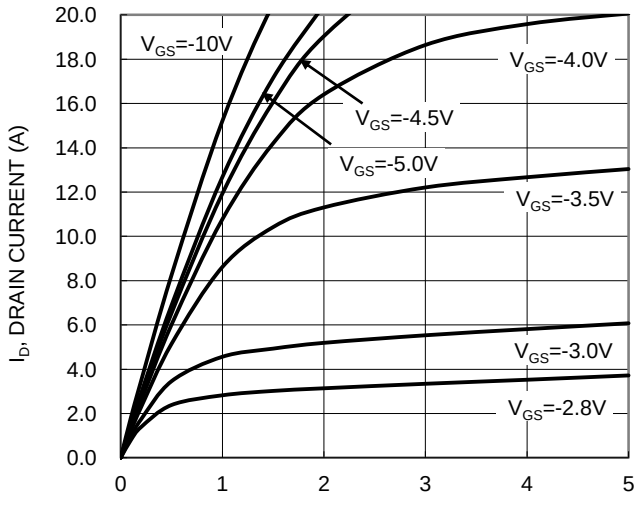


Figure 1. Typical Output Characteristic

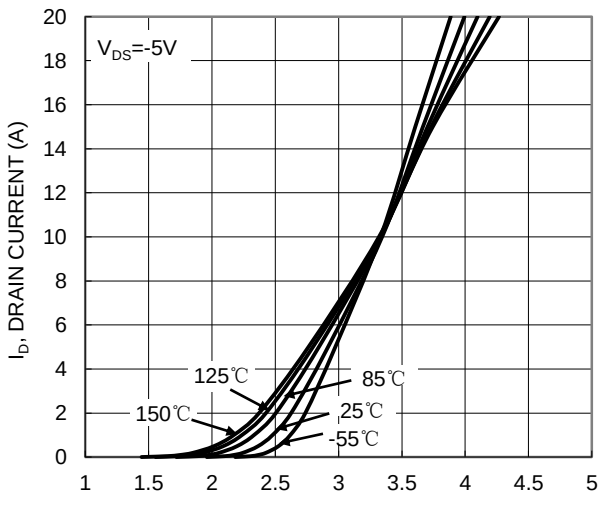


Figure 2. Typical Transfer Characteristic

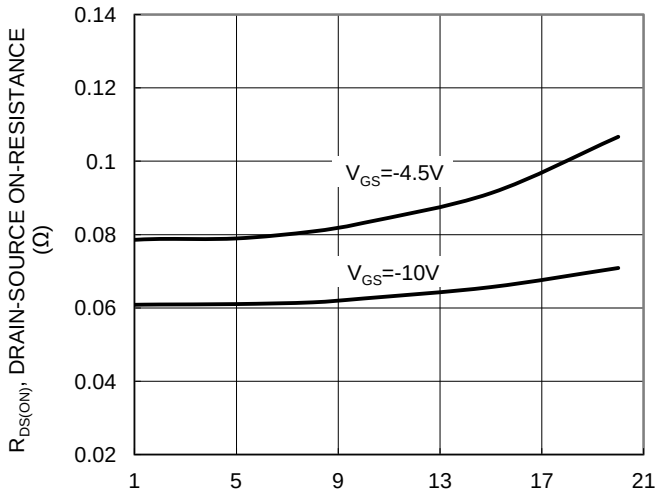


Figure 3. Typical On-Resistance vs. Drain Current and Gate Voltage

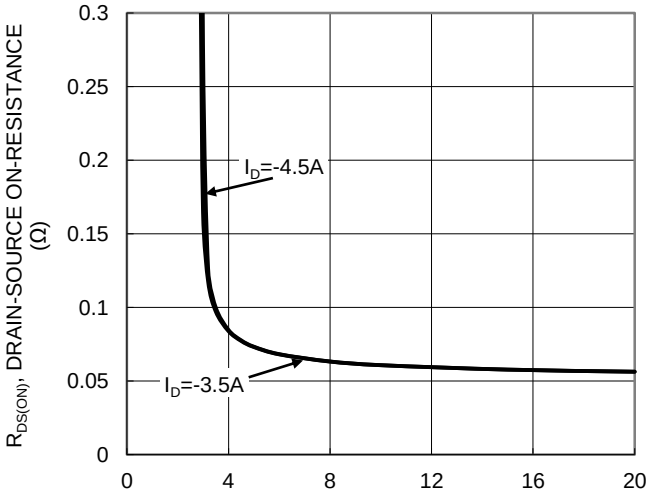


Figure 4. Typical Transfer Characteristic

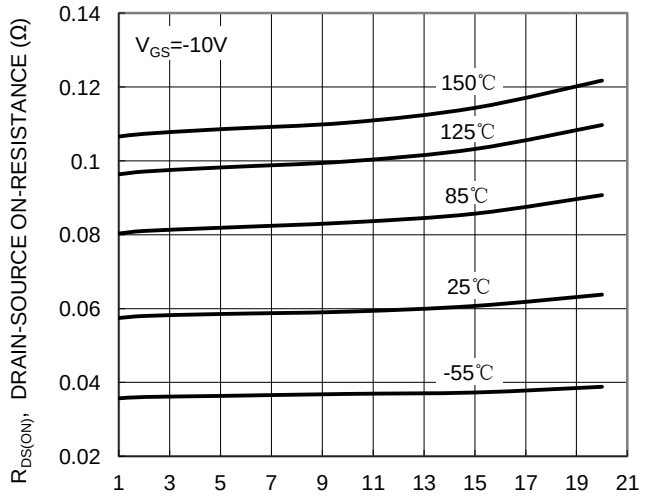


Figure 5. Typical On-Resistance vs. Drain Current and Temperature

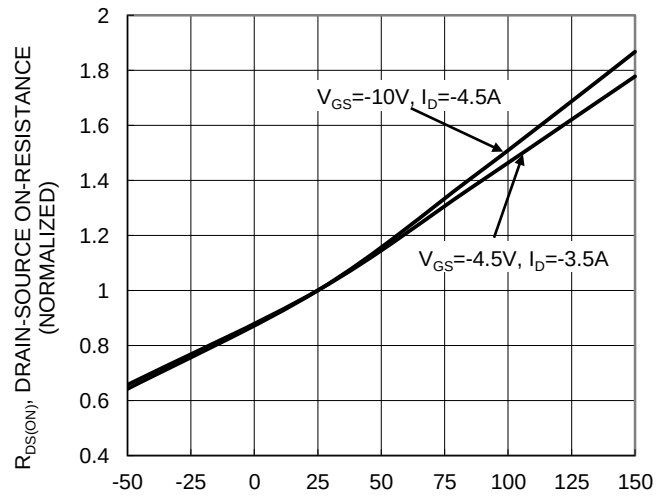


Figure 6. On-Resistance Variation with Temperature

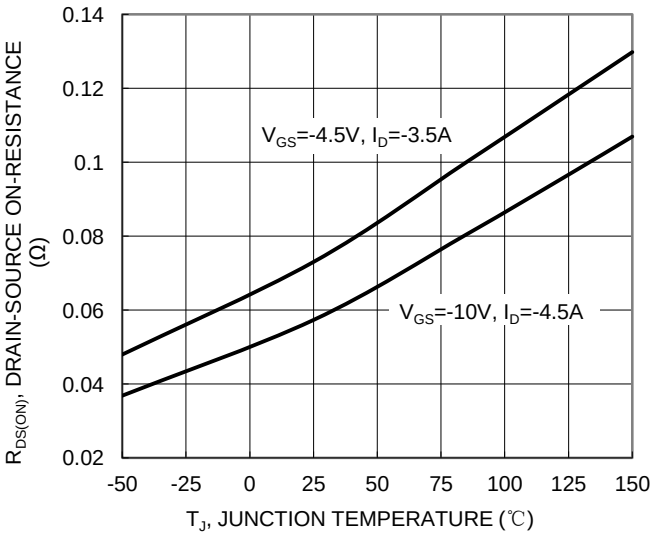


Figure 7. On-Resistance Variation with Temperature

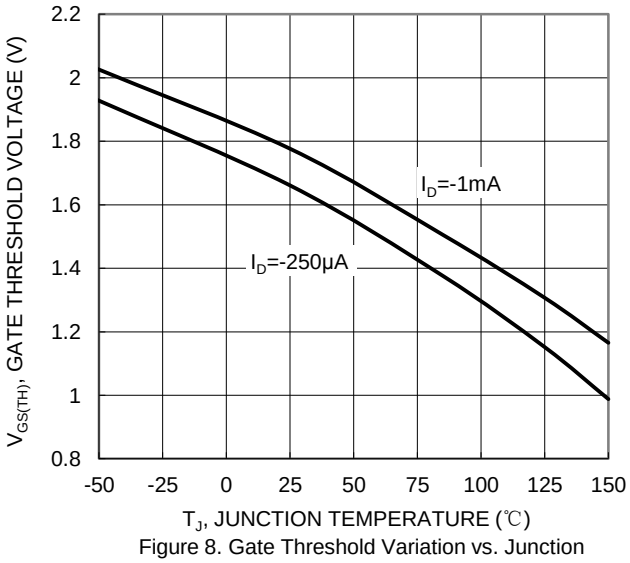


Figure 8. Gate Threshold Variation vs. Junction Temperature

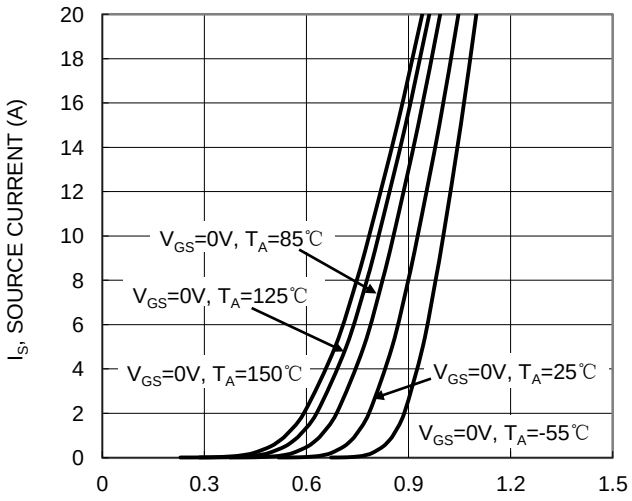


Figure 9. Diode Forward Voltage vs. Current

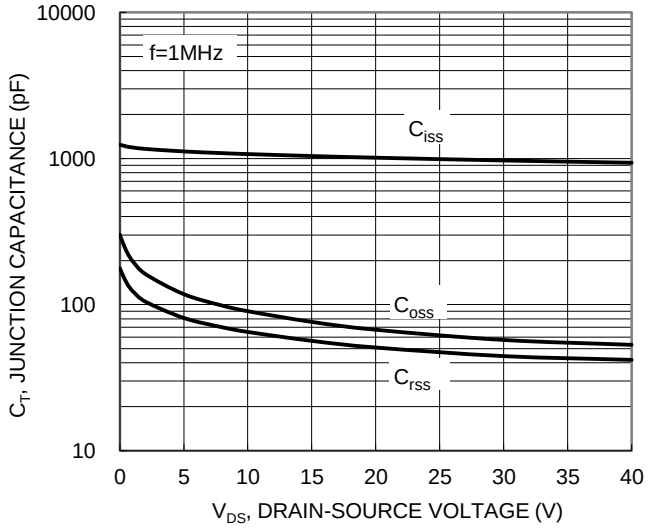


Figure 10. Typical Junction Capacitance

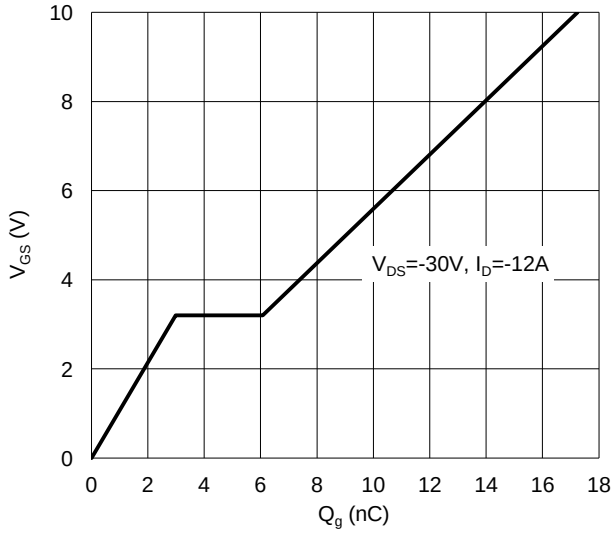


Figure 11. Gate Charge

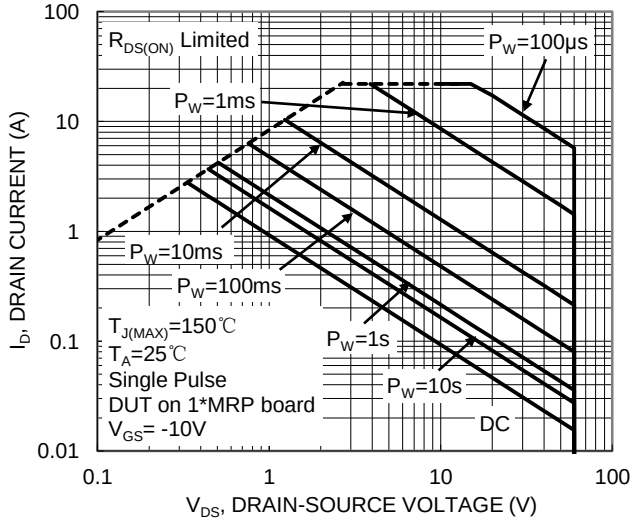


Figure 12. SOA, Safe Operation Area

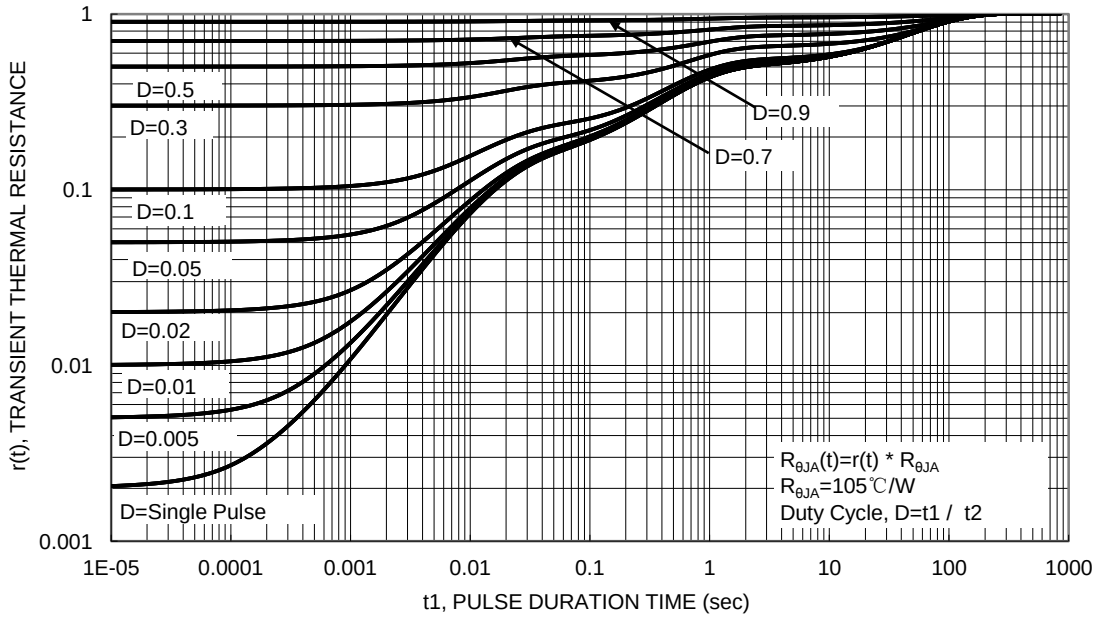
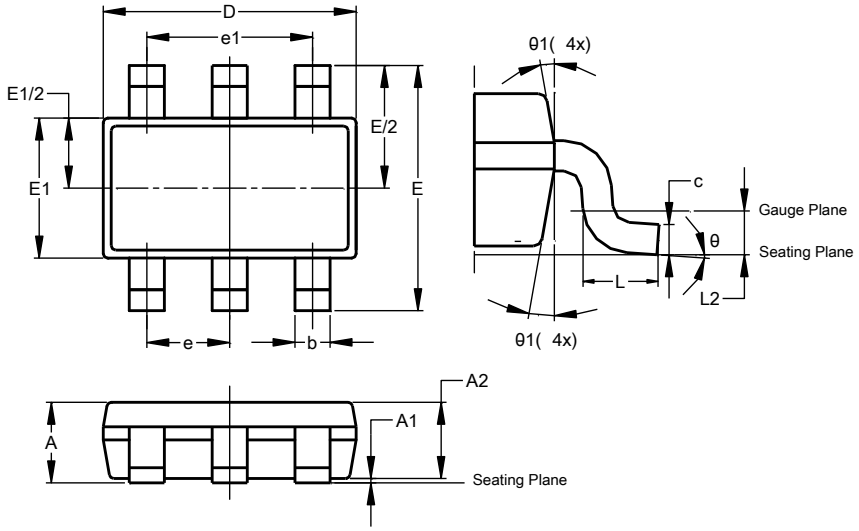


Figure 13. Transient Thermal Resistance

Package Outline Dimensions

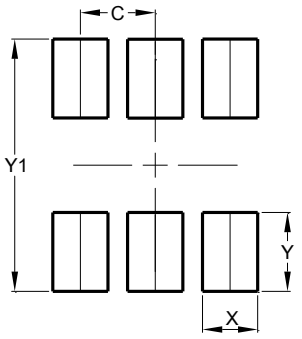
TSOT26



TSOT26			
Dim	**Min**	**Max**	**Typ**
A	–	1.00	–
A1	0.010	0.100	–
A2	0.840	0.900	–
D	2.800	3.000	2.900
E	2.800 BSC		
E1	1.500	1.700	1.600
b	0.300	0.450	–
c	0.120	0.200	–
e	0.950 BSC		
e1	1.900 BSC		
L	0.30	0.50	–
L2	0.250 BSC		
θ	0°	8°	4°
θ1	4°	12°	–
All Dimensions in mm			

Suggested Pad Layout

TSOT26



Dimensions	Value (in mm)
C	0.950
X	0.700
Y	1.000
Y1	3.199