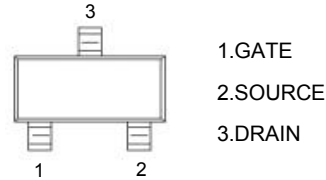
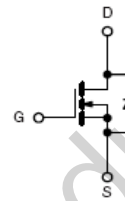


■ Features

- 0.22 A, 25 V. $R_{DS(ON)} = 4 \Omega @ V_{GS} = 4.5 V$
 $R_{DS(ON)} = 5 \Omega @ V_{GS} = 2.7 V.$
- Very low level gate drive requirements allowing direct operation in 3V circuits. $V_{GS(th)} < 1.5V.$
- Gate-Source Zener for ESD ruggedness.
 $> 6kV$ Human Body Model
- Replace multiple NPN digital transistors with one DMOSFET.

SOT-23-3

Equivalent Circuit

■ Absolute Maximum Ratings $T_A = 25^\circ C$

Parameter	Symbol	Rating	Unit
Drain-Source Voltage, Power Supply Voltage	V_{DS}, V_{CC}	25	V
Gate-Source Voltage, V_{IN}	V_{GS}, V_I	8	V
Drain/Output Current - Continuous	I_D	0.22	A
- pulse		0.5	A
Maximum Power Dissipation	P_D	0.35	W
Electrostatic Discharge Rating MIL-STD-883D Human Body Model (100pf / 1500 Ohm)	ESD	6	kV
Thermal Resistance, Junction-to- Ambient	$R_{\theta JA}$	357	$^\circ C/W$
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-55 to +150	$^\circ C$

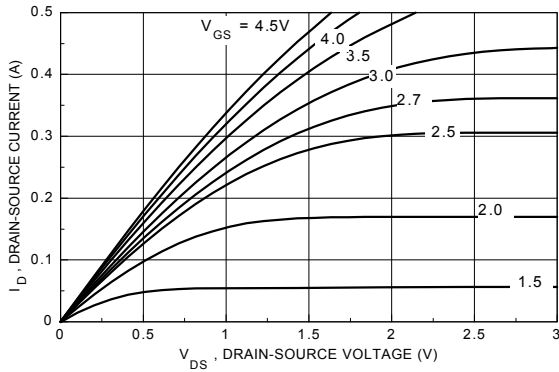
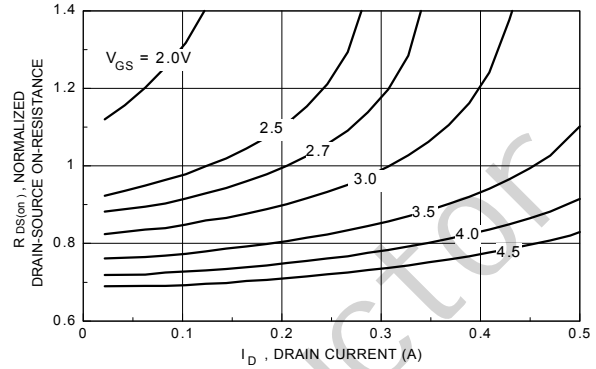
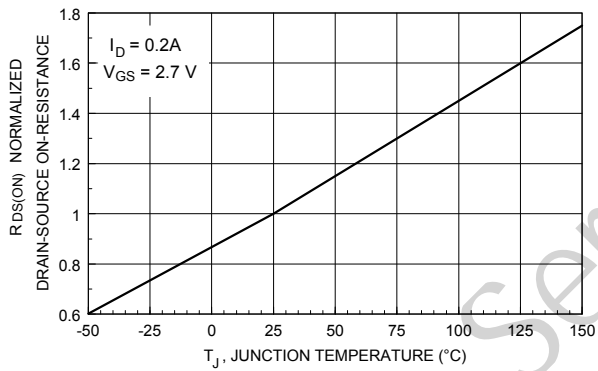
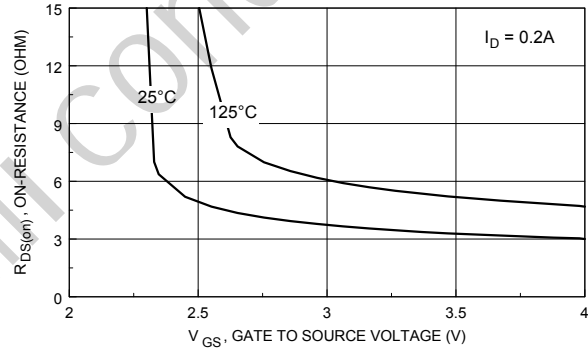
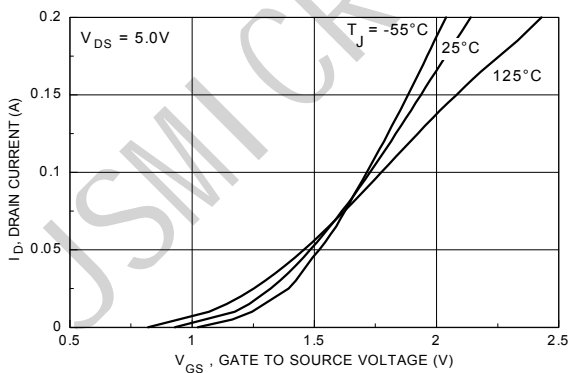
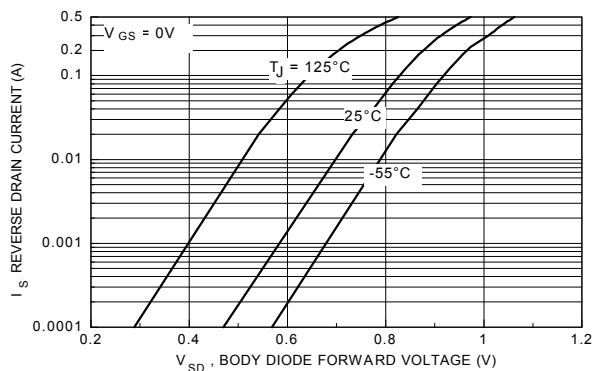
■ Inverter Electrical Characteristics $T_A = 25^\circ C$ unless otherwise noted

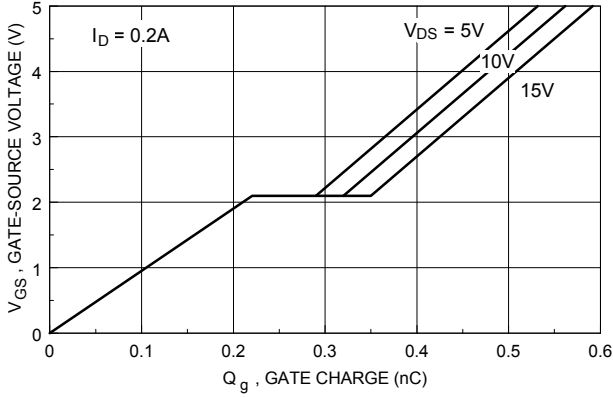
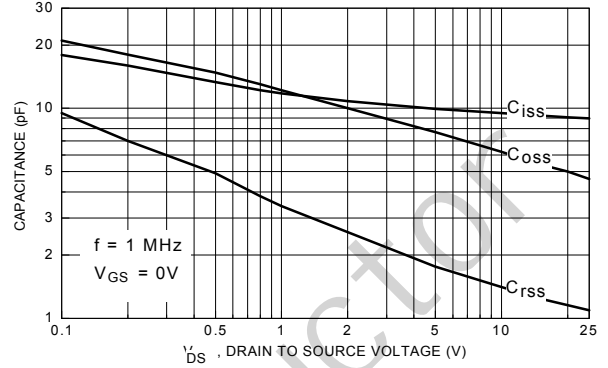
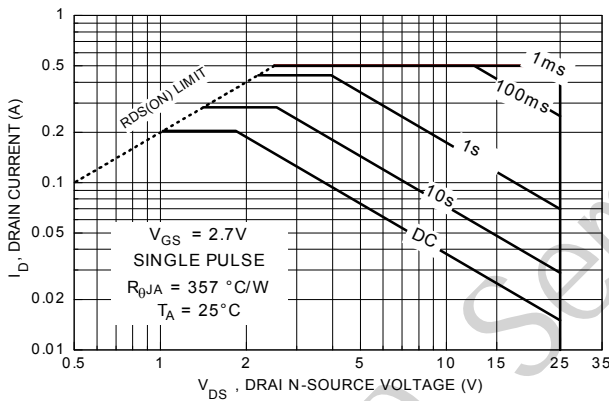
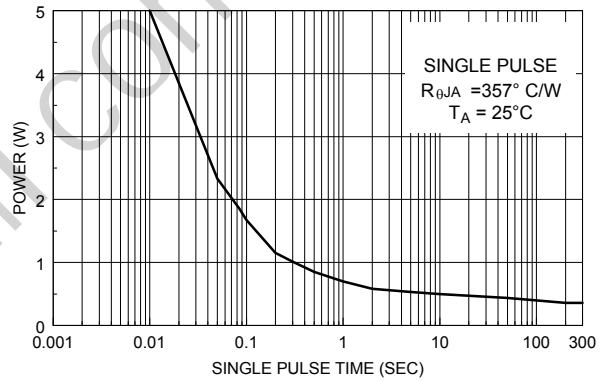
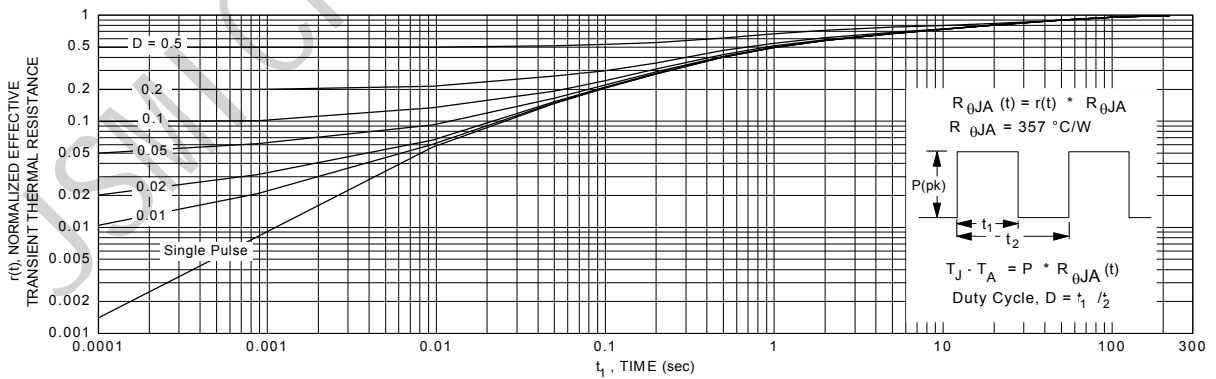
Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Zero Input Voltage Output Current	$I_O (off)$	$V_{CC} = 20 V, V_I = 0 V$			1.0	μA
Input Voltage	$V_I (off)$	$V_{CC} = 5 V, I_O = 10 \mu A$			0.5	V
	$V_I (on)$	$V_O = 0.3 V, I_O = 5 mA$	1.0			V
Output to Ground Resistance	$R_O (on)$	$V_I = 2.7 V, I_O = 0.2 A$			5.0	Ω

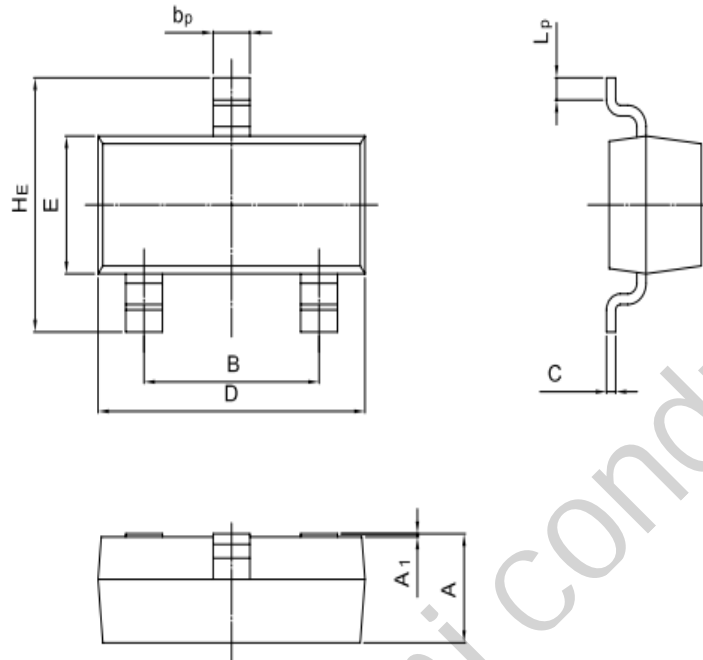
■ Electrical Characteristics Ta = 25°C unless otherwise noted

Parameter	Symbol	Testconditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V _{DSS}	V _{GS} = 0 V, I _D = 250 μA	25			V
Breakdown Voltage Temp. Coefficient	ΔV _{DSS} /ΔT _J	I _D = 250 μA, Referenced to 25°C		25		mV/°C
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 20 V, V _{GS} = 0 V			1	μA
		V _{DS} = 20 V, V _{GS} = 0 V, T _J = 55°C			10	μA
Gate-Body Leakage Current, Forward	I _{GSSF}	V _{GS} = 8 V, V _{DS} = 0 V			100	nA
Gate-Body Leakage Current, Reverse	I _{GSSR}	V _{GS} = -8 V, V _{DS} = 0 V			-100	nA
Gate Threshold Voltage (Note)	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250 μA	0.65	0.8	1.5	V
Gate Threshold Voltage Temp. Coefficient (Note)	ΔV _{GS(th)} /T _J	I _D = 250 μA, Referenced to 25°C		-2.1		mV/°C
Static Drain-Source On-Resistance(Note)	R _{DS(on)}	V _{GS} = 4.5V, I _D = 0.4A			4.0	Ω
		V _{GS} = 2.7V, I _D = 0.2 A			5.0	
On-State Drain Current (Note)	I _{D(on)}	V _{GS} = 2.7 V, V _{DS} = 5 V	0.2			A
Forward Transconductance	g _{FS}	V _{DS} = 5V, I _D = 0.4 A		0.2		S
Input Capacitance	C _{iss}	V _{DS} = 10 V, V _{GS} = 0 V, f = 1.0 MHz		9.5		pF
Output Capacitance	C _{oss}			6.0		
Reverse Transfer Capacitance	C _{rss}			1.3		
Turn-On Delay Time (Note)	t _{d(on)}	V _{DD} = 6V, I _D = 0.5A, V _{GS} = 4.5V, R _{GEN} = 50Ω		3.2	8	ns
Turn-On Rise Time (Note)	t _r			6	15	
Turn-Off Delay Time (Note)	t _{d(off)}			3.5	8	
Turn-Off Fall Time (Note)	t _f			3.5	8	
Total Gate Charge (Note)	Q _g	V _{DS} = 5 V, I _D = 0.2A, V _{GS} = 4.5V,		0.49	0.7	nC
Gate-Source Charge (Note)	Q _{gs}			0.22		
Gate-Drain Charge (Note)	Q _{gd}			0.07		
Maximum Continuous Drain-Source Diode Forward Current	I _S				0.29	A
Drain-Source Diode Forward Voltage(Note)	V _{SD}	V _{GS} = 0 V, I _S = 0.29 A			1.2	V

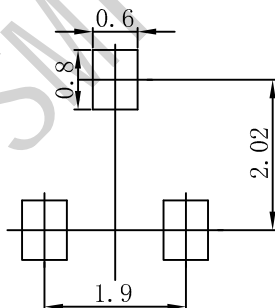
Note: Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2.0%.

Typical Characteristics

Figure 1. On-Region Characteristics.

Figure 2. On-Resistance Variation with Drain Current and Gate Voltage.

Figure 3. On-Resistance Variation with Temperature.

Figure 4. On Resistance Variation with Gate-To-Source Voltage.

Figure 5. Transfer Characteristics.

Figure 6. Body Diode Forward Voltage Variation with Source Current and Temperature.

Typical Characteristics

Figure 7. Gate Charge Characteristics.

Figure 8. Capacitance Characteristics.

Figure 9. Maximum Safe Operating Area.

Figure 10. Single Pulse Maximum Power Dissipation.

Figure 11. Transient Thermal Response Curve .

SOT-23 Package Outline Dimensions


UNIT	A	B	bp	C	D	E	HE	A ₁	L _p
mm	1.40	2.04	0.50	0.19	3.10	1.65	3.00	0.100	0.50
	0.95	1.78	0.35	0.08	2.70	1.20	2.20	0.013	0.20

SOT-23 Suggested Pad Layout

Note:

1. Controlling dimension: in millimeters.
2. General tolerance: ± 0.05 mm.
3. The pad layout is for reference purposes only.

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