

Product Summary

- V_{DS} 100 V
- I_{DS} 50A
- $R_{DS(ON)}$ (at $V_{GS}=10V$) $\leq 18m\Omega$ (TYP)
- Advanced Trench Technology

Application

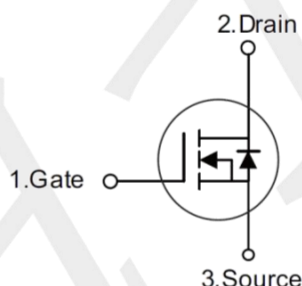
- Reverse Battery protection
- Load switch
- Power management
- PWM Application

Package and Pin Configuration



TO-252

Circuit diagram



Absolute Maximum Ratings ($T_A=25^\circ\text{C}$ unless otherwise noted)

PARAMETER		SYMBOL	LIMIT	UNIT
Drain-Source Voltage		V_{DS}	100	V
Gate-Source Voltage		V_{GS}	± 20	V
Continuous Drain Current	$T_C=25^\circ\text{C}$	I_D	50	A
	$T_C=100^\circ\text{C}$		30	
Pulsed Drain Current		I_{DM}	200	A
Total Power Dissipation		P_{DTOT}	100	W
Operating Junction Temperature Range		T_J	-55 to +175	$^\circ\text{C}$
Storage Temperature Range		T_{stg}	-55 to +175	$^\circ\text{C}$

Thermal Characteristic

PARAMETER		Symbol	Value	Unit
Thermal Resistance, Junction to Case	PCB Mount (Note)	$R_{\theta JC}$	2	$^\circ\text{C/W}$

Note : When mounted on 1" square PCB (FR4 material).

Electrical Characteristics (T_A=25°C unless otherwise noted)

PARAMETER	CONDITIONS	SYMBOL	MIN	TYP	MAX	UNIT
Static						
Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	BV_{DSS}	100	--	--	V
Gate-Source Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	$V_{GS(th)}$	2.0	3.0	4.0	V
Gate-Source Leakage	$V_{DS}=0V, V_{GS}= \pm 20V$	I_{GSS}	--	--	± 100	nA
Zero Gate Voltage Drain Current	$V_{DS}= 80V, V_{GS}=0V$	I_{DSS}	--	--	1	μA
	$V_{DS}= 80V, T_J=125^{\circ}C$		--	--	50	μA
Drain-Source On-State Resistance (Note 1)	$V_{GS}= 10V, I_D= 20A$	$R_{DS(on)}$	--	18	22.5	m Ω
	$V_{GS}= 4.5V, I_D= 20A$		--	22	27.5	
Dynamic (Note 2)						
Total Gate Charge (Note 3)	$V_{DS}= 50V, I_D= 10A,$ $V_{GS}= 10V$	Q_g	--	33.3	--	nC
Gate-Source Charge (Note 3)		Q_{gs}	--	6.9	--	
Gate-Drain Charge (Note 3)		Q_{gd}	--	5.1	--	
Input Capacitance	$V_{DS}= 50V, V_{GS}= 0V,$ $F= 1.0MHz$	C_{iss}	--	1870	--	pF
Output Capacitance		C_{oss}	--	260	--	
Reverse Transfer Capacitance		C_{rss}	--	6.9	--	
Switching						
Turn-On Delay Time (Note 3)	$V_{DD}= 50V, I_D= 10A,$ $V_{GS}= 10V,$ $R_{GEN}= 6\Omega$	$t_{d(on)}$	--	6.5	--	nS
Rise Time (Note 3)		t_r	--	7	--	
Turn-Off Delay Time (Note 3)		$t_{d(off)}$	--	19.6	--	
Fall Time (Note 3)		t_f	--	8	--	
Source-Drain Diode Ratings and Characteristics (Note 2)						
Forward Voltage	$V_{GS}= 0V, I_S= 20A$	V_{SD}	--	0.8	1.3	V
Continuous Source Current	Integral reverse diode in the MOSFET	I_S	--	--	50	A
Pulsed Current (Note 1)		I_{SM}	--	--	200	A

Notes:

1. Pulse test; pulse width ≤ 300 μS, duty cycle ≤ 2%.
2. Guaranteed by design, not subject to production testing.
3. Independent of operating temperature

TYPICAL CHARACTERISTICS

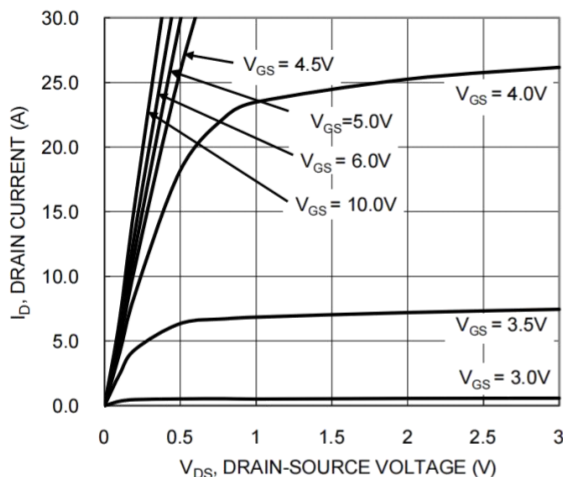


Figure 1. Typical Output Characteristic

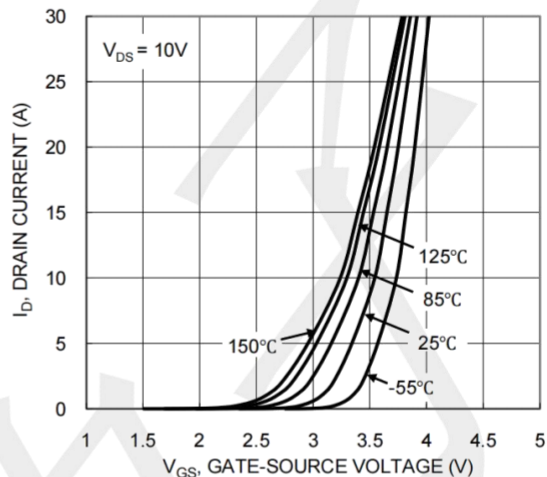


Figure 2. Typical Transfer Characteristic

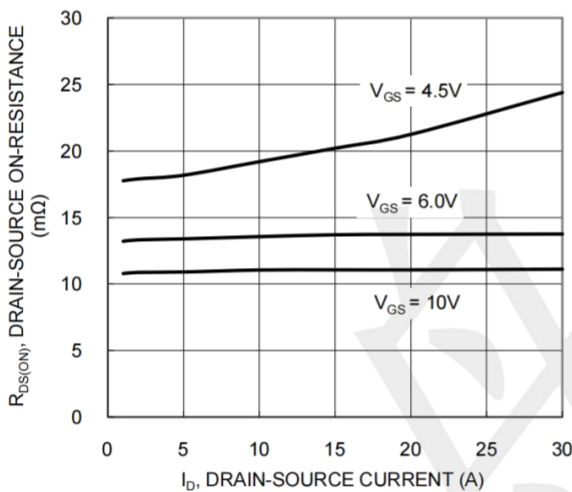


Figure 3. Typical On-Resistance vs. Drain Current and Gate Voltage

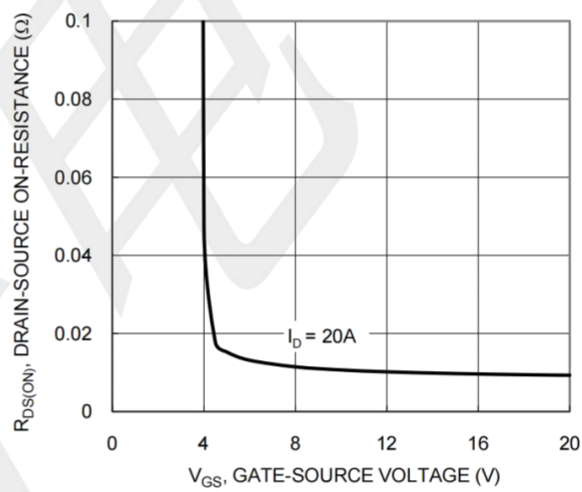


Figure 4. Typical Transfer Characteristic

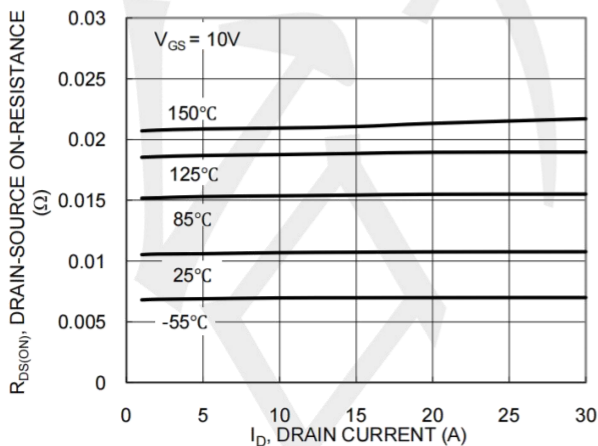


Figure 5. Typical On-Resistance vs. Drain Current and Junction Temperature

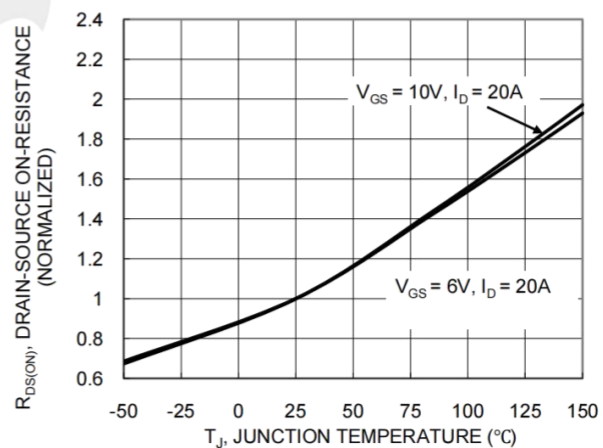
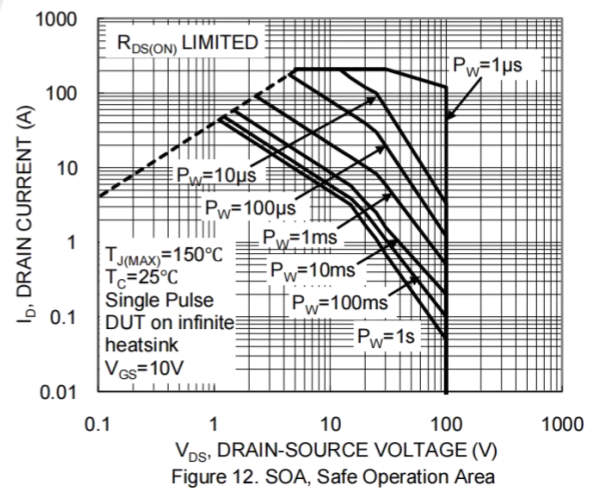
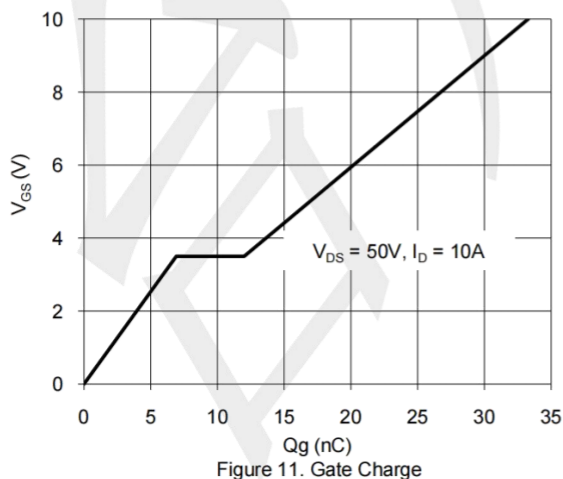
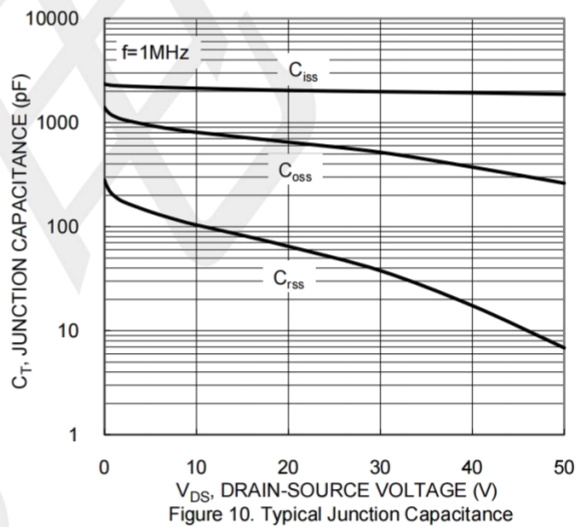
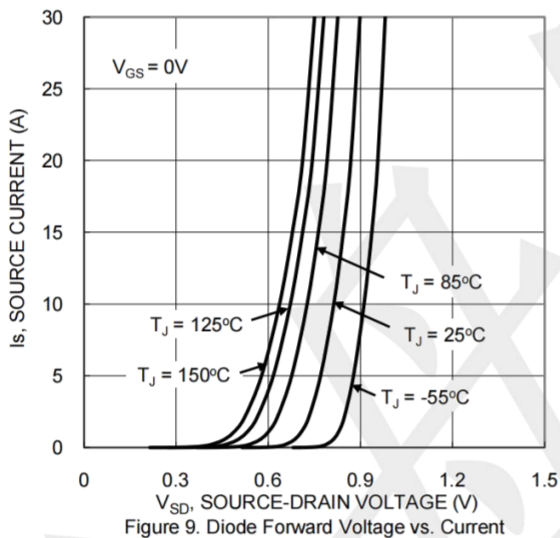
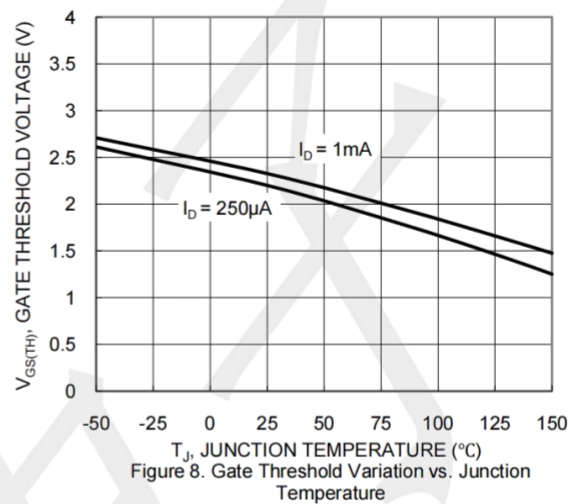
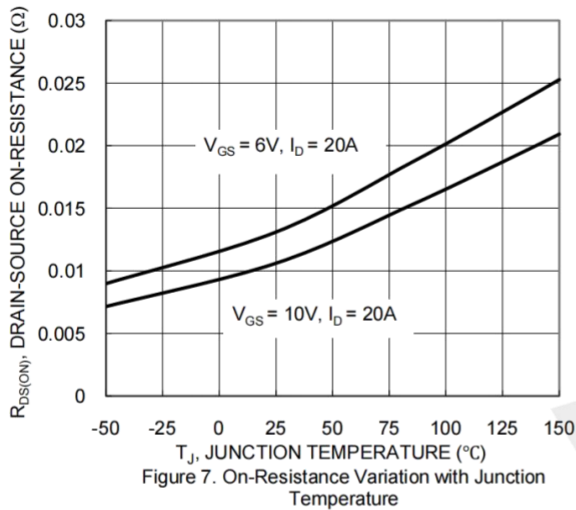


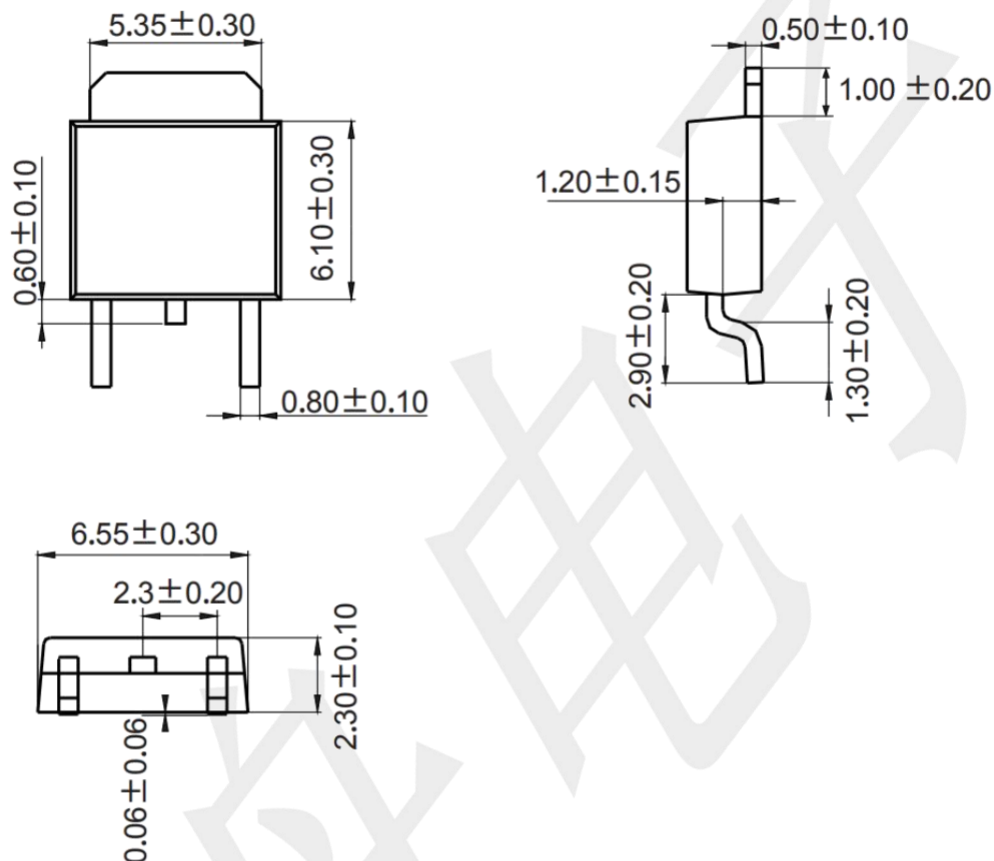
Figure 6. On-Resistance Variation with Junction Temperature

TYPICAL CHARACTERISTICS



Package Outline Dimensions (unit: mm)

TO-252



Mounting Pad Layout (unit: mm)

