

Product Summary

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

Application

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

Package and Pin Configuration

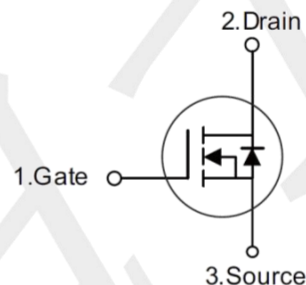


T0-252

Marking:



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	$T_C=25^{\circ}\text{C}$	$P_{D(TOT)}$	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	$V_{DS}=V_{GS}, I_D=250\mu A$	$V_{GS(th)}$	--	1.5	--	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	--	m Ω
	$V_{GS}= 4.5V, I_D= 20A$		--	22	--	
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

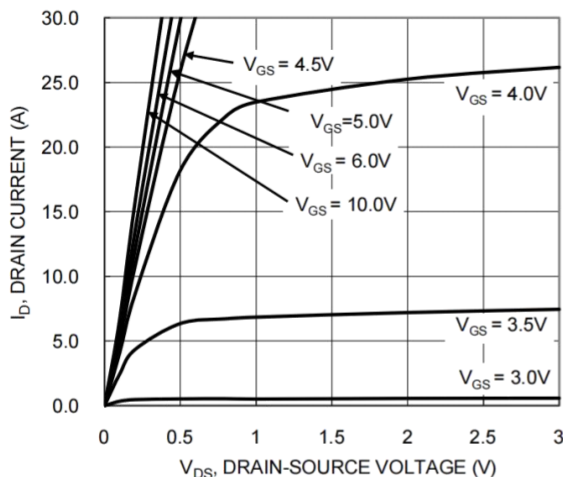


Figure 1. Typical Output Characteristic

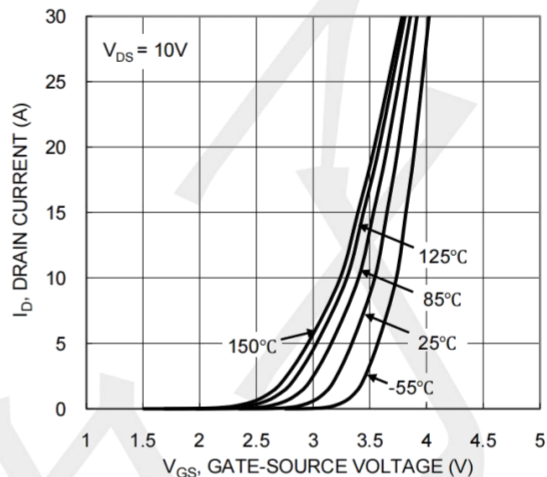


Figure 2. Typical Transfer Characteristic

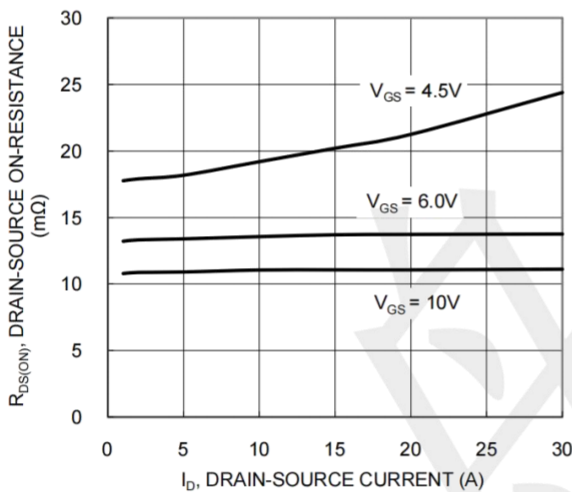


Figure 3. Typical On-Resistance vs. Drain Current and Gate Voltage

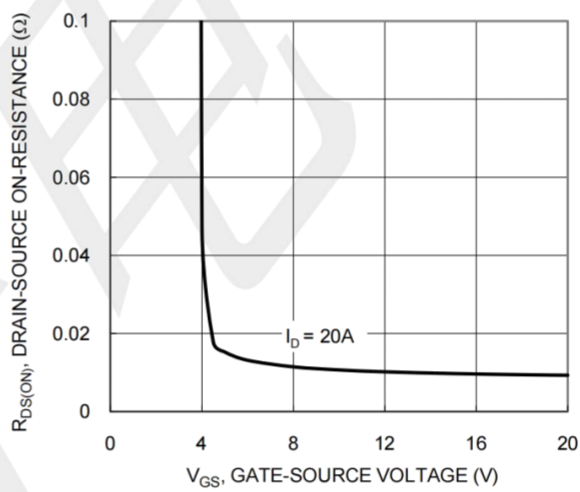


Figure 4. Typical Transfer Characteristic

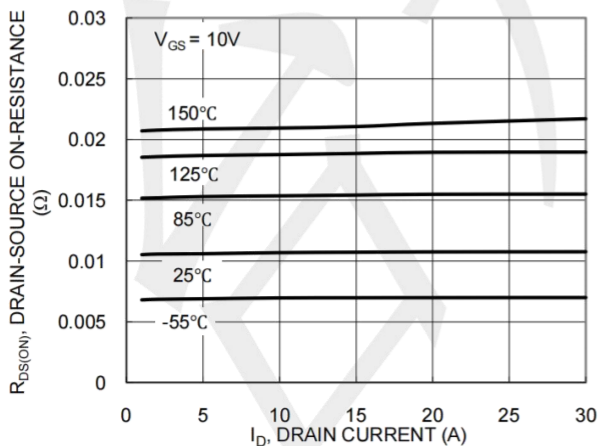


Figure 5. Typical On-Resistance vs. Drain Current and Junction Temperature

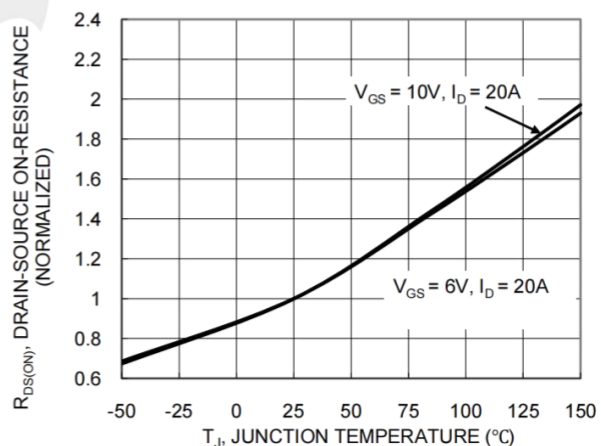
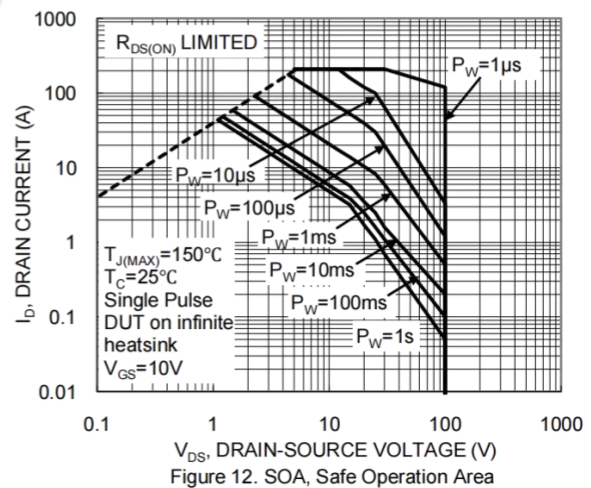
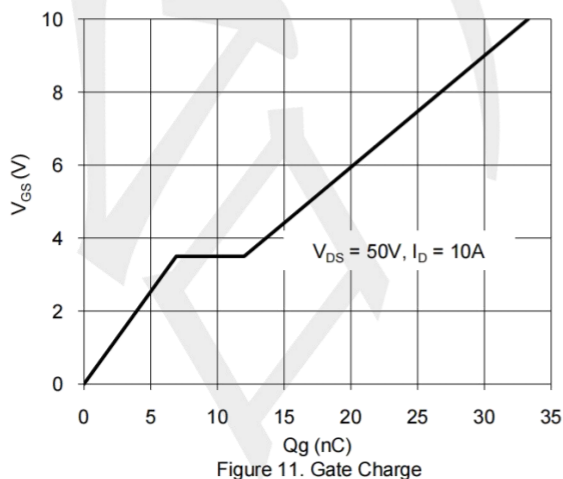
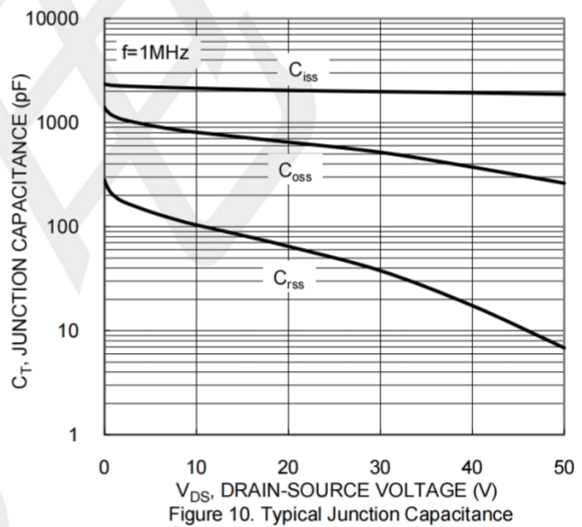
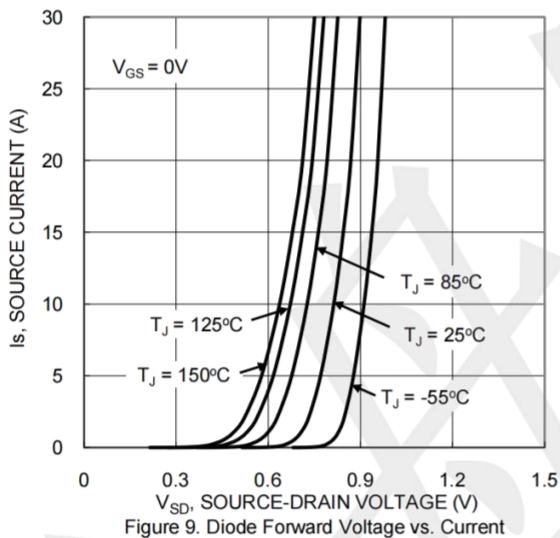
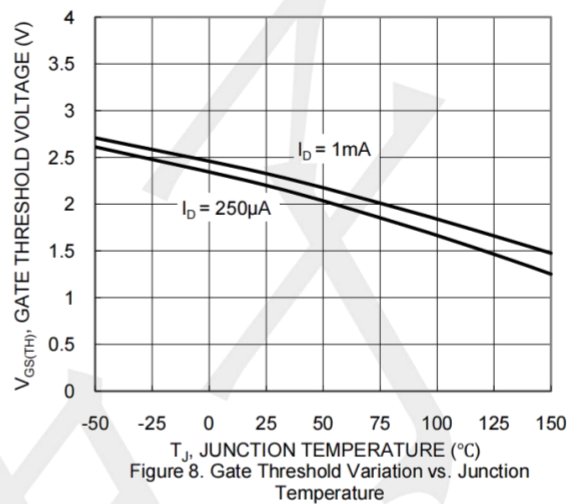
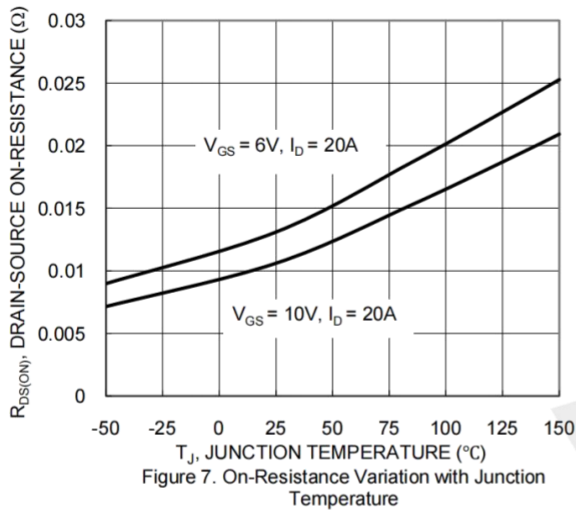
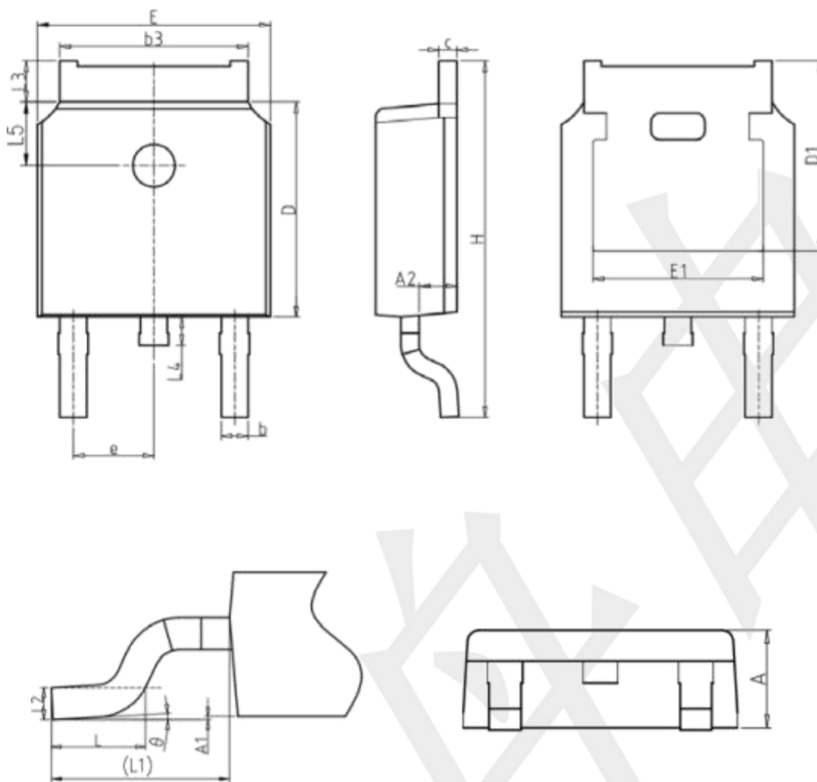


Figure 6. On-Resistance Variation with Junction Temperature

TYPICAL CHARACTERISTICS



Outline Drawing - TO-252



COMMON DIMENSIONS

SYMBOL	mm		
	MIN	NOM	MAX
A	2.20	2.30	2.40
A1	0.00	-	0.20
A2	0.97	1.07	1.17
b	0.68	0.78	0.90
b3	5.20	5.33	5.50
c	0.43	0.53	0.63
D	5.98	6.10	6.22
D1	5.30REF		
E	6.40	6.60	6.80
E1	4.63	-	-
e	2.286BSC		
H	9.40	10.10	10.50
L	1.38	1.50	1.75
L1	2.90REF		
L2	0.51BSC		
L3	0.88	-	1.28
L4	-	-	1.00
L5	1.65	1.80	1.95
θ	0°	-	8°