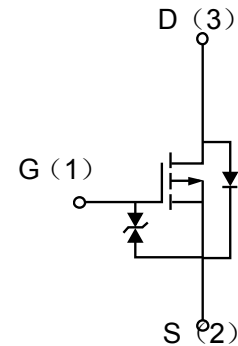


## Description

The enhancement mode MOS is extremely high density cell and low on-resistance.

MOSFET Product Summary		
$V_{DS}(V)$	$R_{DS(on)}(\Omega)$	$I_D(A)$
-20	0.037 @ $V_{GS}=-4.5V$	-4



## Absolute maximum rating@25°C

Rating	Symbol	Value	Units
Drain-Source Voltage	$V_{DS}$	-20	V
Gate-Source Voltage	$V_{GS}$	$\pm 10$	V
Drain Current Continuous	$I_D$	-4	A
Pulsed Drain Current (Note 1)	$I_{DM}$	-30	A
Total Power Dissipation	$P_D$	1.4	W
Junction and Storage Temperature Range	$T_J, T_{STG}$	-55 to +150	°C

## Thermal resistance

Parameter	Symbol	Typ.	Units
Maximum Junction-to-Ambient (Note 2)	$R_{\theta JA}$	89.3	°C/W

Electrical characteristics per line @25°C ( unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Drain-Source Breakdown Voltage	$BV_{DSS}$	$I_D = -250\mu A, V_{GS} = 0V$	-20	-	-	V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = -20V, V_{GS} = 0V$	-	-	-1.0	$\mu A$
Gate-to-Source Forward Leakage	$I_{GSS}$	$V_{GS} = \pm 10V, V_{DS} = 0V$	-	-	$\pm 10$	$\mu A$
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\mu A$	-0.4	-0.65	-1.0	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS} = -4.5V, I_D = -4A$	-	0.037	0.047	$\Omega$
		$V_{GS} = -2.5V, I_D = -4A$	-	0.049	0.060	$\Omega$
Forward Trans conductance	$g_{FS}$	$V_{DS} = -5V, I_D = -4A$	8	-	-	S
Total Gate Charge	Qg	$I_D = -4A, V_{DS} = -10V, V_{GS} = -4.5V$	-	17	-	nC
Gate-to-Source Charge	Qgs		-	1.2	-	
Gate-to-Drain(Miller) Charge	Qgd		-	4.3	-	
Input Capacitance	$C_{ISS}$	$V_{GS} = 0V, V_{DS} = -10V, f = 1MHz$	-	1250	-	pF
Output Capacitance	$C_{DSS}$		-	200	-	pF
Reverse Transfer Capacitance	$C_{RSS}$		-	155	-	pF
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = -10V, V_{GS} = -4.5V, R_L = 2.5\Omega, R_{GEN} = 3\Omega$	-	9.3	-	ns
Rise Time	$t_r$		-	15	-	
Turn-Off Delay Time	$t_{d(off)}$		-	80	-	
Fall Time	$t_f$		-	25	-	
Diode Forward Voltage (Note 3)	$V_{SD}$	$V_{GS} = 0V, I_S = 1V$	-	-	-1.2	V
Diode Forward Current (Note 2)	$I_S$		-	-	-2.2	A

**Note1:** Repetitive Rating: Pulse width limited by maximum junction temperature.

**Note2:** Surface Mounted on FR4 Board,  $t \leq 10sec$ .

**Note3:** Pulse Test Pulse Width  $\leq 300\mu s$ , Duty Cycle  $\leq 2\%$ .

Typical Characteristics

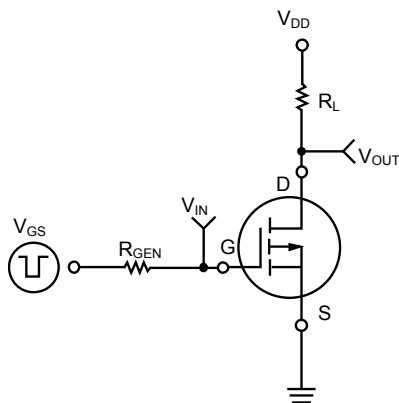


Figure 1. Switching Test Circuit

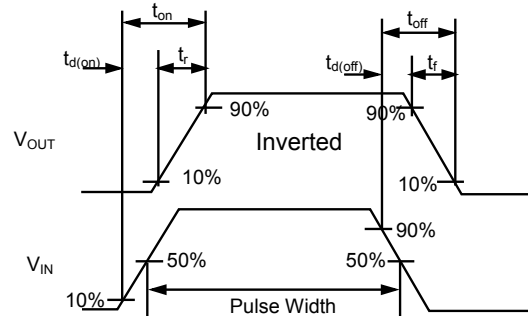


Figure 2. Switching Waveforms

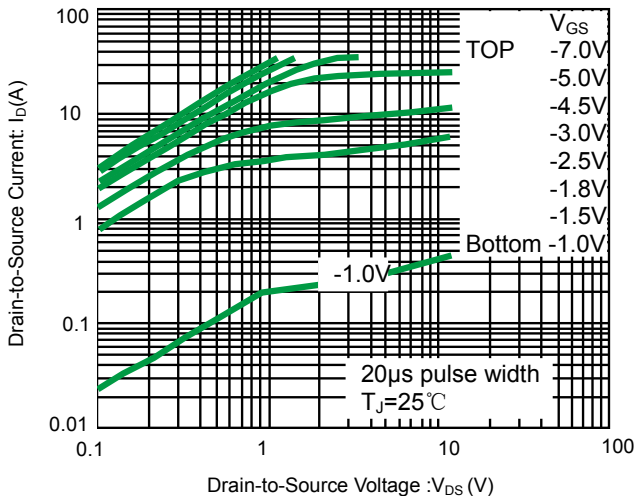


Fig 3. Typical output characteristics

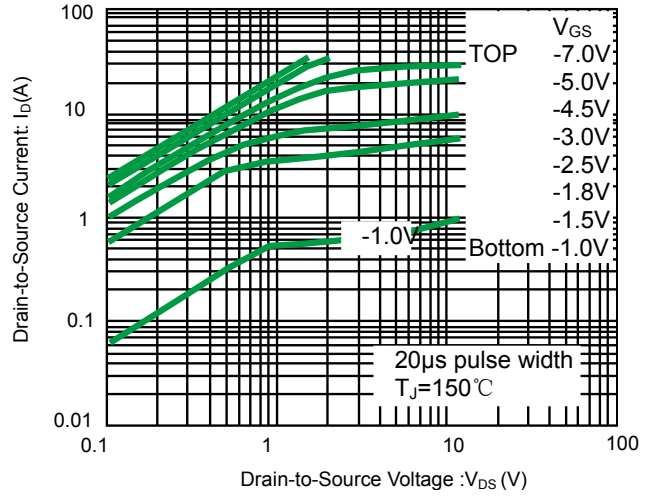


Fig 4. Typical output characteristics

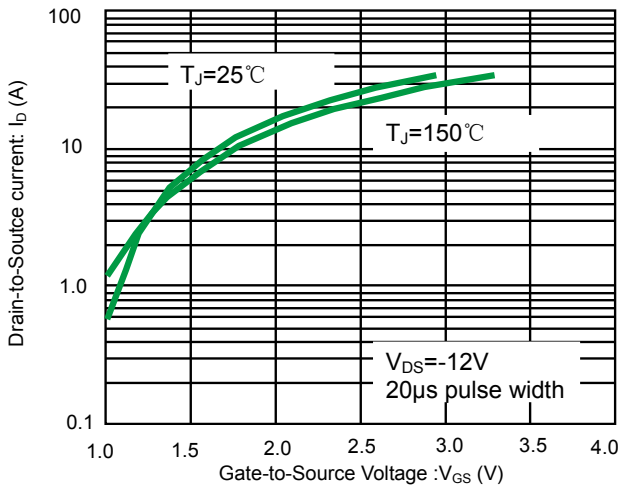


Fig 5. Typical transfer characteristics

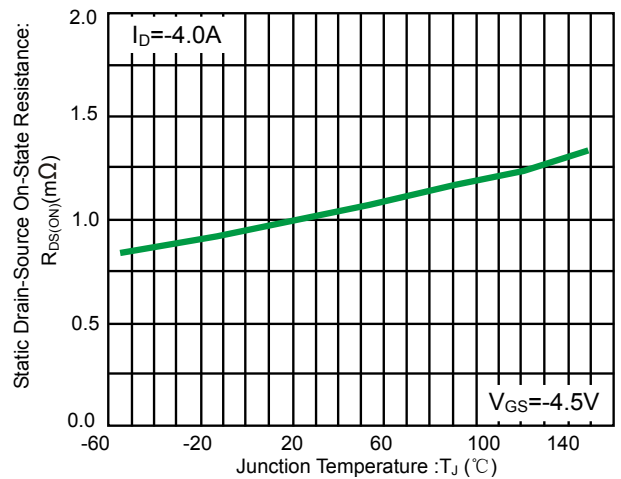


Fig 6. Normalized On-Resistance vs, Temperature

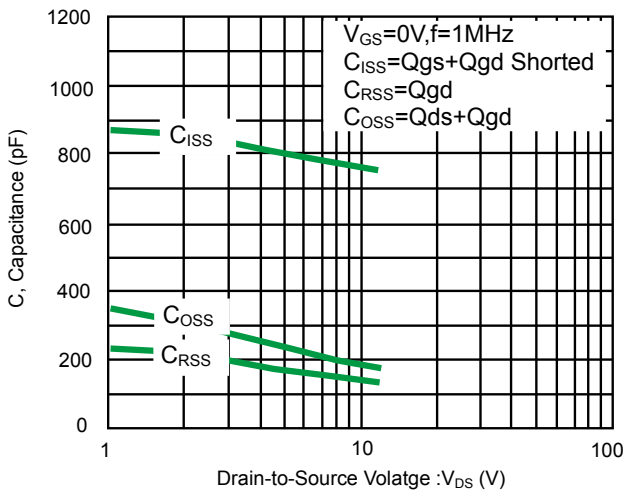


Fig 7. Typical Capacitance vs. Drain-to-Source voltage

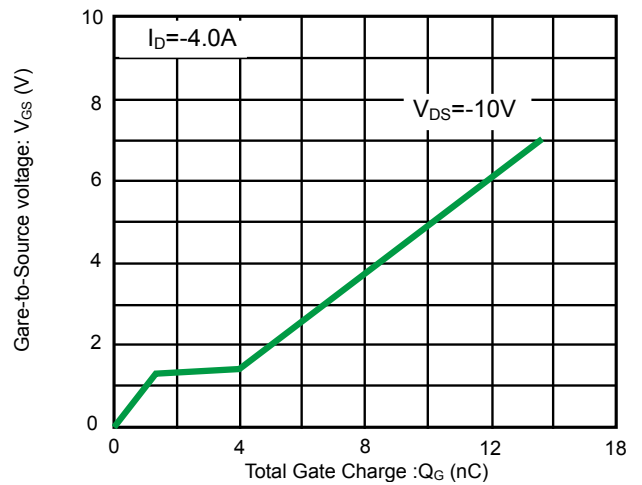


Fig 8. Typical Gate Charge vs. Gate-to-Source voltage

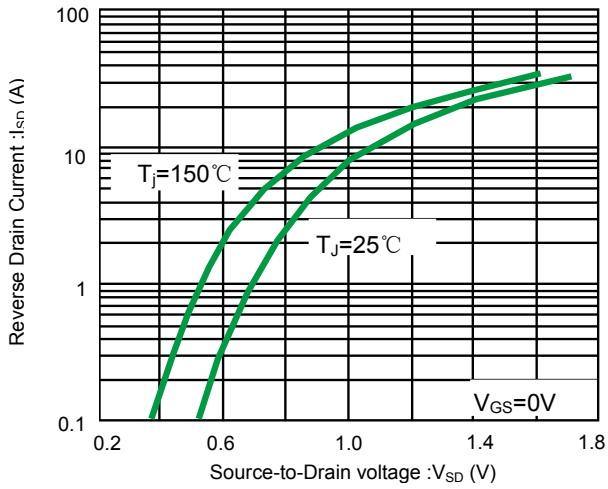


Fig 9. Typical Source-Drain Diode Forward Voltage

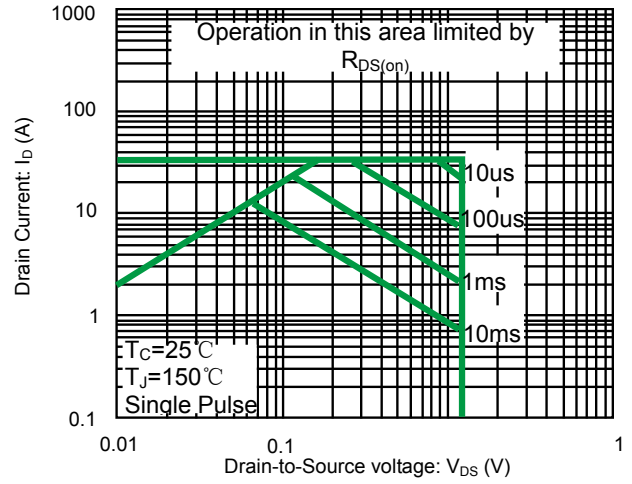


Fig 10. Maximum Safe Operating Area

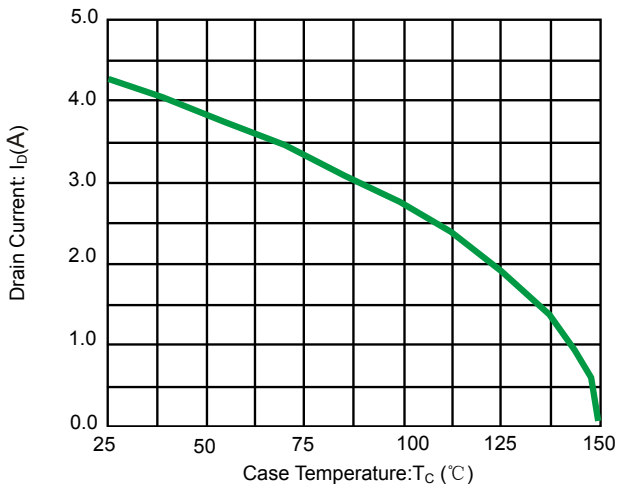


Fig 11. Maximum Drain Current vs. Case Temperature

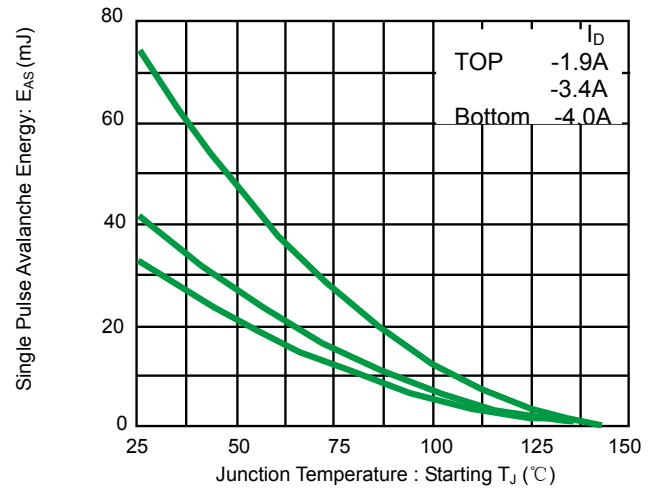


Fig 12. Maximum Avalanche Energy vs. Drain Current

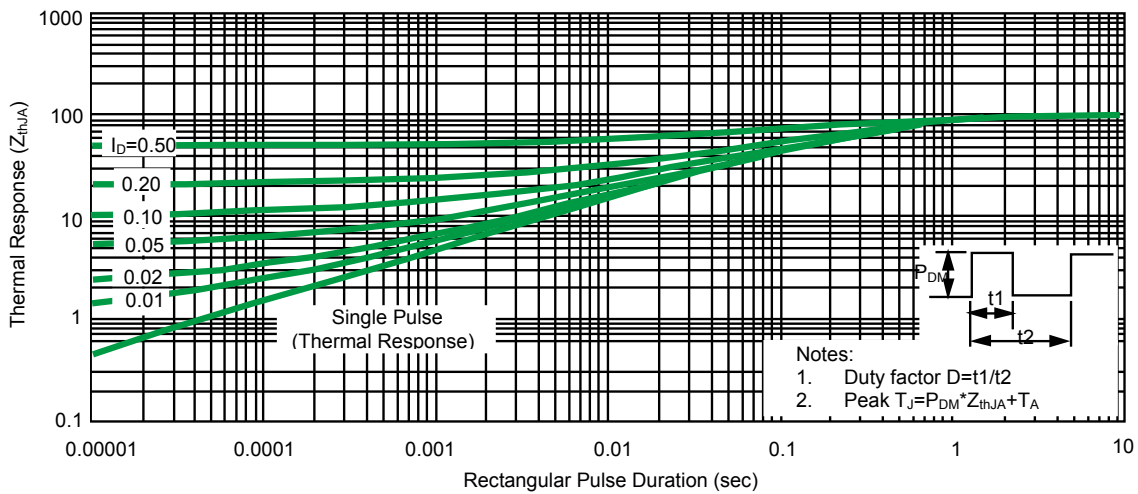


Fig 13. Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

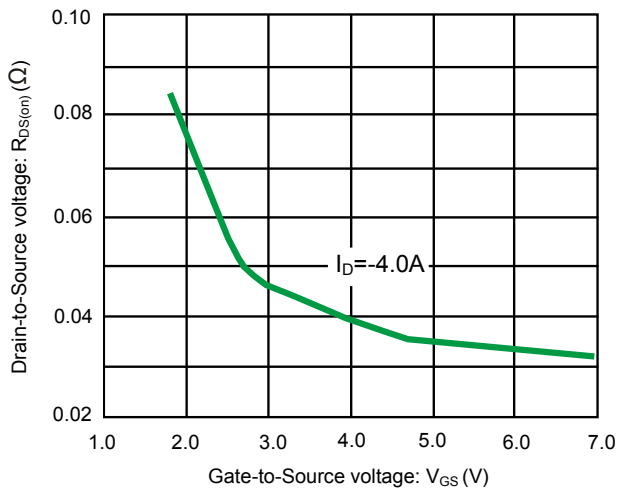


Fig 14. Typical On-Resistance vs. Gate Voltage

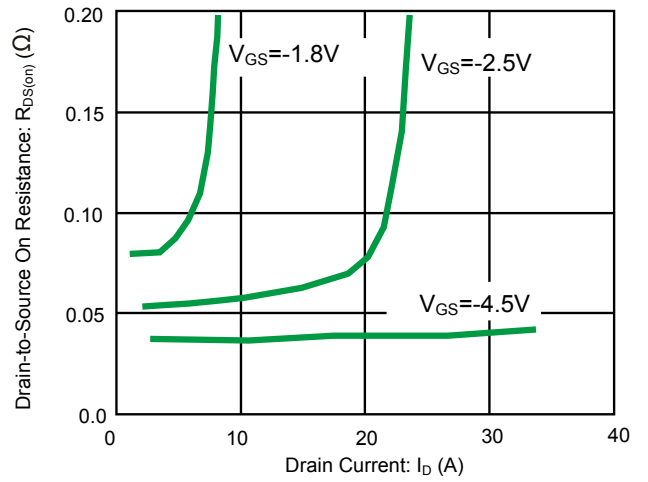


Fig 15. Typical On-Resistance vs. Drain Current

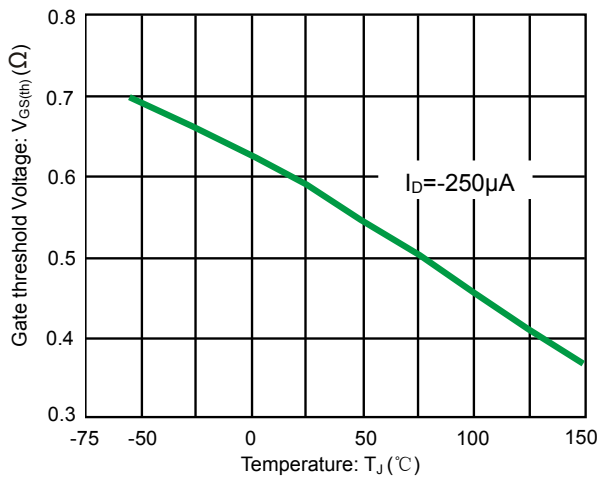
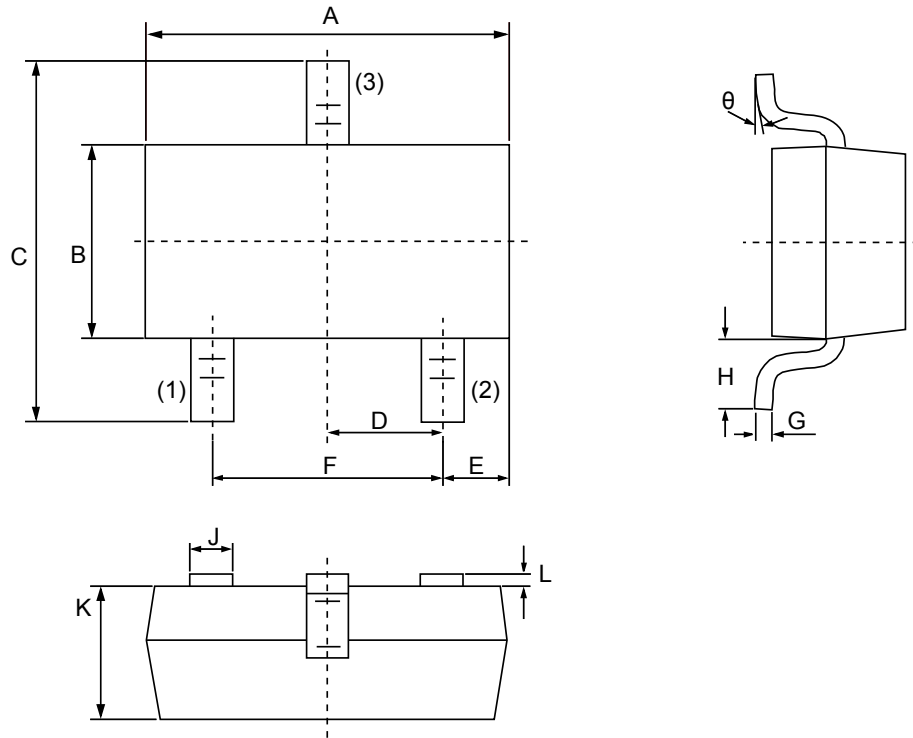



Fig16. Typical Threshold Voltage vs. Junction Temperature

Product dimension(SOT-23)



Dim	Millimeters		Inches	
	MIN	MAX	MIN	MAX
A	2.80	3.00	0.1102	0.1197
B	1.20	1.40	0.0472	0.0551
C	2.10	2.50	0.0830	0.0984
D	0.89	1.02	0.0350	0.0401
E	0.45	0.60	0.0177	0.0236
F	1.78	2.04	0.0701	0.0807
G	0.085	0.177	0.0034	0.0070
H	0.45	0.60	0.0180	0.0236
J	0.37	0.50	0.0150	0.0200
K	0.89	1.11	0.0350	0.0440
L	0.013	0.100	0.0005	0.0040
θ	0°	10°	0°	10°


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