Elektronische Bauelemente

SSM452

-6 A, -30V, $R_{DS(ON)}$ 55mΩ
P-Channel Enhancement Mode Power MOSFET

RoHS Compliant Product
A Suffix of "-C" specifies halogen & lead-free

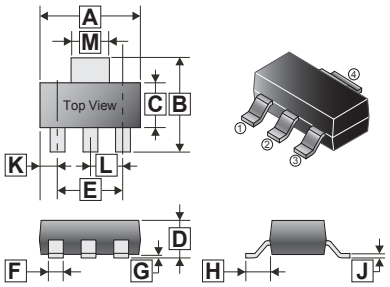
DESCRIPTION

The SSM452 provide the designer with the best combination of fast switching, low on-resistance and cost-effectiveness.

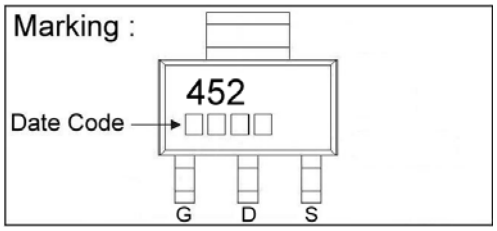
FEATURES

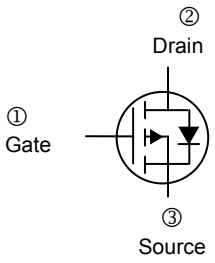
- Simple Drive Requirement
- Lower On-resistance
- Fast Switching

SOT-223



MARKING





REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	6.20	6.70	G	-	0.10
B	6.70	7.30	H	-	-
C	3.30	3.70	J	0.25	0.35
D	1.42	1.90	K	-	-
E	4.50	4.70	L	2.30 REF.	
F	0.60	0.82	M	2.90	3.10

MAXIMUM RATINGS (T_A = 25°C unless otherwise specified)

PARAMETER		SYMBOL	RATING	UNIT
Drain – Source Voltage		V_{DS}	-30	V
Gate – Source Voltage		V_{GS}	±20	V
Continuous Drain Current [3]	T_A = 25°C	I_D	-6.0	A
	T_A = 70°C		-4.8	A
Pulsed Drain Current [1]		I_{DM}	-20	A
Total Power Dissipation		P_D	2.7	W
Linear Derating Factor			0.02	W / °C
Operating Junction & Storage Temperature Range		T_J, T_{STG}	-55 ~ 150	°C
THERMAL DATA				
Maximum Junction–Ambient [3]		$R_{\theta JA}$	45	°C / W

ELECTRICAL CHARACTERISTICS (T_J = 25°C unless otherwise specified)

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT	TEST CONDITION
Drain-Source Breakdown Voltage	BV_{DSS}	-30	-	-	V	V_{GS}= 0V, I_D = -250uA
Breakdown Voltage Temperature Coefficient	$\triangle BV_{DSS}$ / $\triangle T_J$	-	-0.02	-	V / °C	Reference to 25°C, I_D= -1mA
Gate Threshold Voltage	$V_{GS(TH)}$	-1.0	-	-3.0	V	V_{DS}= V_{GS}, I_D = -250uA
Forward Transconductance	g_{FS}	-	10	-	S	V_{DS}= -10V, I_D= -5.3A
Gate-Source Leakage Current	I_{GSS}	-	-	±100	nA	V_{GS}= ±20V
Drain-Source Leakage Current (T_J= 25°C)	I_{DSS}	-	-	-1	μA	V_{DS}= -30V, V_{GS}=0V
Drain-Source Leakage Current (T_J= 70°C)		-	-	-25		V_{DS}= -24V, V_{GS}=0V
Drain-Source On Resistance	$R_{DS(ON)}$	-	45	55	mΩ	V_{GS}= -10V, I_D= -5.3A
		-	75	100		V_{GS}= -4.5V, I_D= -4.2A
Total Gate Charge [2]	Q_g	-	9.2	16	nC	V_{GS}= -4.5V
Gate-Source Charge	Q_{gs}	-	2.8	-		V_{DS}= -24V
Gate-Drain ("Miller") Charge	Q_{gd}	-	5.2	-		I_D= -5.3A
Turn-on Delay Time [2]	$T_{d(ON)}$	-	11	-	nS	V_{DS}= -15V
Rise Time	T_r	-	8	-		V_{GS}= -10V
Turn-off Delay Time	$T_{d(OFF)}$	-	25	-		I_D= -1A
Fall Time	T_f	-	17	-		R_G= 6Ω, R_D= 15Ω
Input Capacitance	C_{ISS}	-	507	912	pF	V_{DS}= -15V
Output Capacitance	C_{OSS}	-	222	-		V_{GS}= 0V
Reverse Transfer Capacitance	C_{RSS}	-	158	-		f= 1MHz
SOURCE-DRAIN DIODE						
Forward On Voltage [2]	V_{SD}	-	-	-1.2	V	V_{GS}= 0V, I_S= -2.3A
Reverse Recovery Time	T_{rr}	-	29	-	nS	V_{GS}= 0V, I_S= -5.3A,
Reverse Recovery Charge	Q_{rr}	-	20	-	nC	dI/dt= 100A/μs

Note:

1. Pulse width limited by Maximum junction temperature.
2. Pulse width ≦ 300 μs, Duty cycle ≦ 2%
3. Surface mounted on 1 in^2 copper pad of FR4 board; 120°C / W when mounted on Min. copper pad.

CHARACTERISTIC CURVES

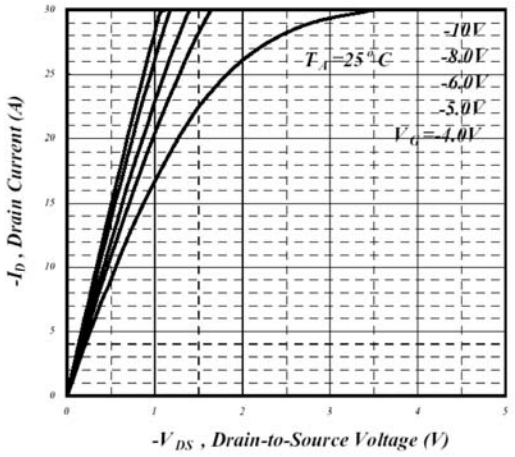


Fig 1. Typical Output Characteristics

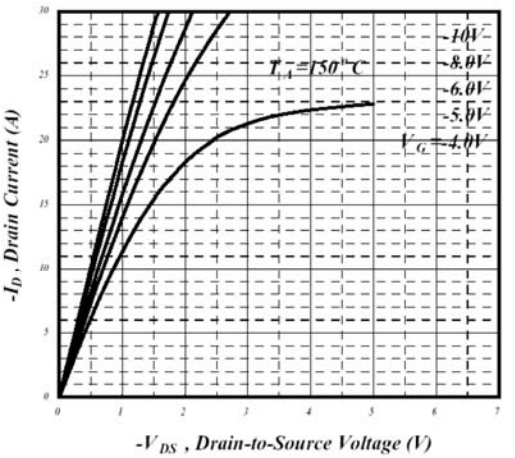


Fig 2. Typical Output Characteristics

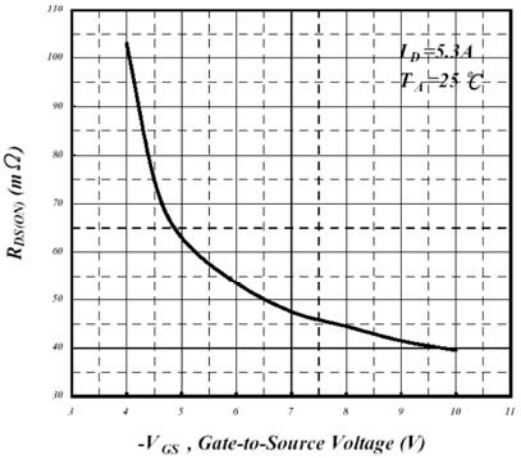


Fig 3. On-Resistance v.s. Gate Voltage

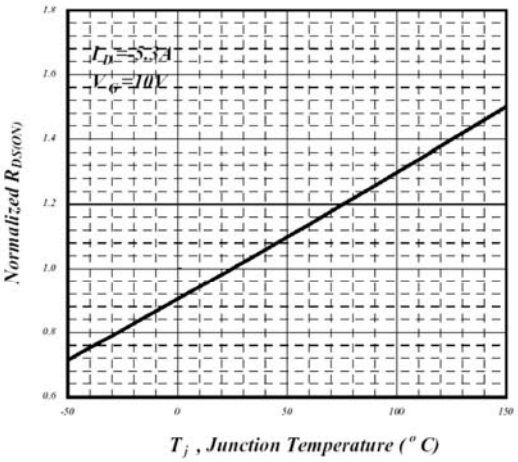


Fig 4. Normalized On-Resistance v.s. Junction Temperature

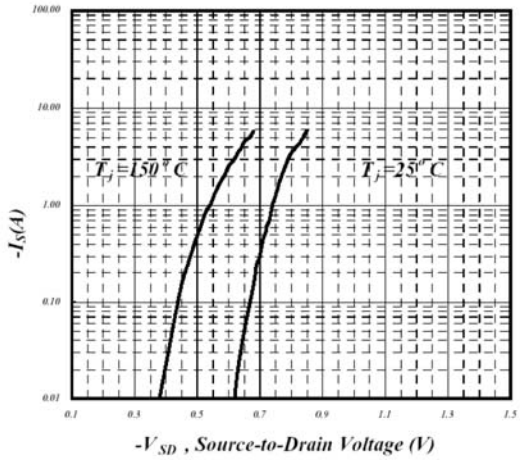


Fig 5. Forward Characteristics of Reverse Diode

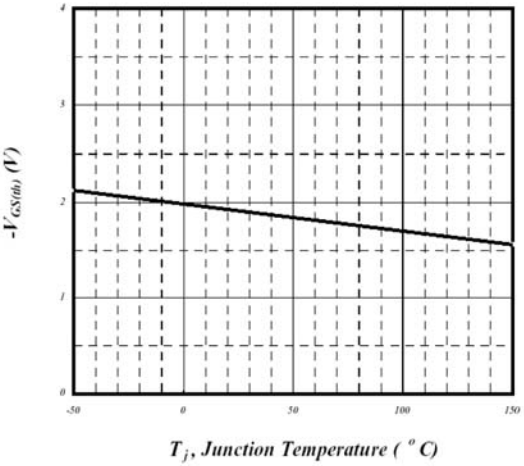


Fig 6. Gate Threshold Voltage v.s. Junction Temperature

CHARACTERISTIC CURVES

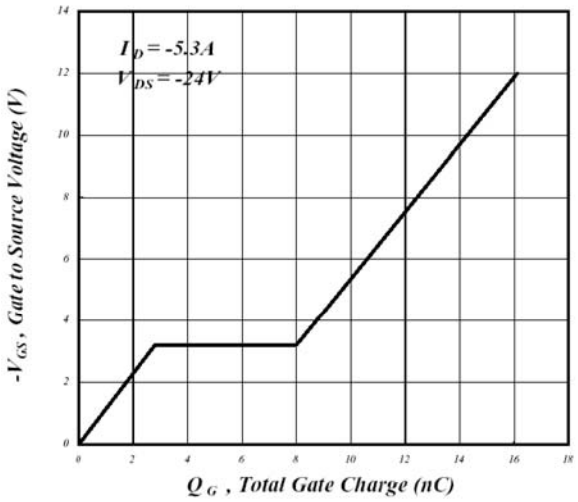


Fig 7. Gate Charge Characteristics

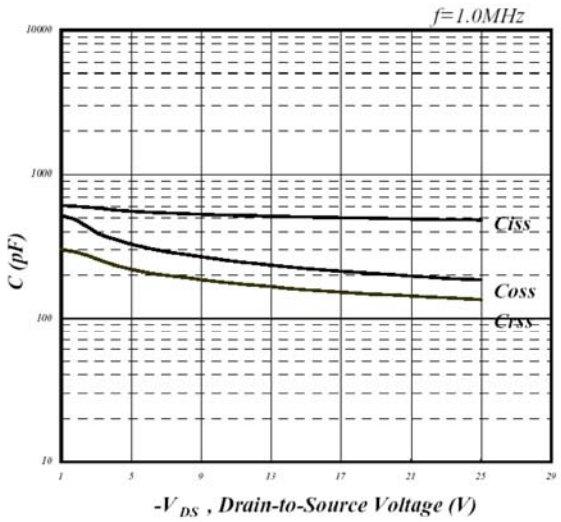


Fig 8. Typical Capacitance Characteristics

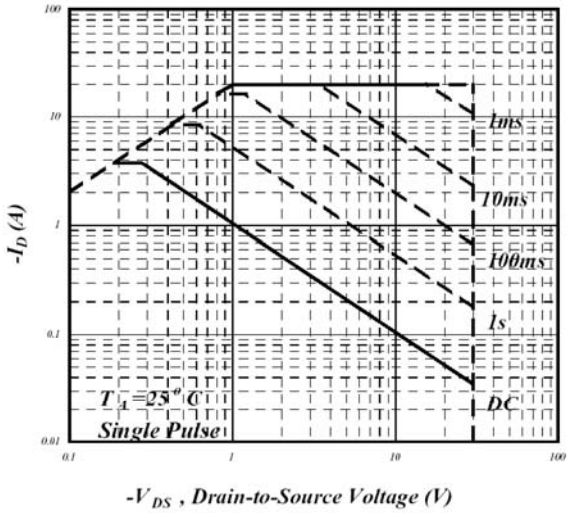


Fig 9. Maximum Safe Operating Area

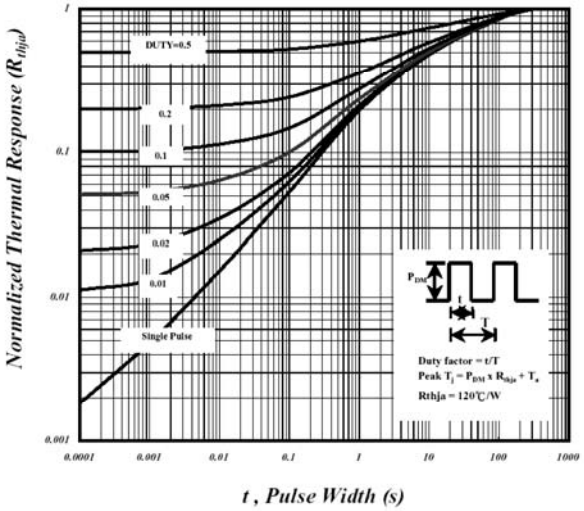


Fig 10. Effective Transient Thermal Impedanc

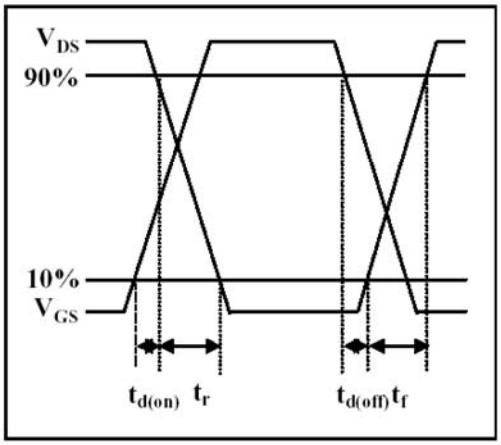


Fig 11. Switching Time Circuit

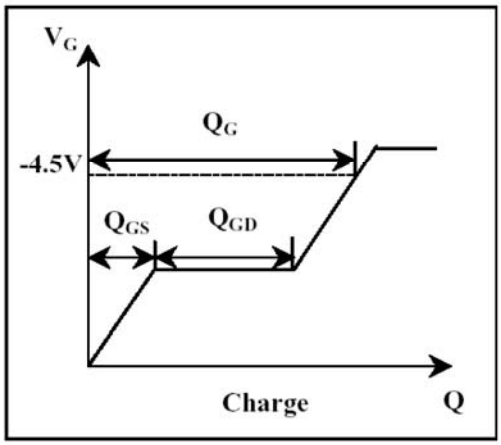


Fig 12. Gate Charge Waveform