MOSFET
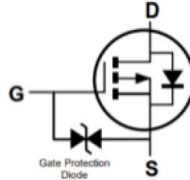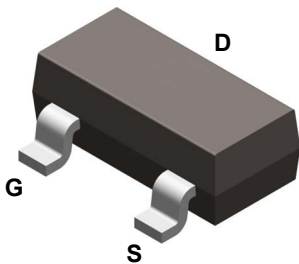## Single, P-Ch

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Features

- Low on-resistance
- High-speed switching
- Drive circuits can be simple
- Parallel use is easy
- ESD protected gate up to 2KV HBM

Typical Applications

- P-channel enhancement mode effect transistor
- Switching application

Mechanical Data

- Case: SOT-23
- Molding Compound: UL Flammability Classification Rating 94V-0
- Terminals: Matte tin-plated leads; solderability-per MIL-STD-202, Method 208

Maximum Ratings (@T_A=25°C unless otherwise specified)

Parameter	Symbol	Value	Units
Drain-to-Source Voltage	V_{DSS}	-50	V
Gate-to-Source Voltage	V_{GSS}	±20	V
Continuous Drain Current	I_D	-130	mA
Pulsed Drain Current *4	I_{DM}	-520	mA

Thermal Characteristics

Parameter		Symbol	Value	Unit
Power Dissipation *1		P_D	0.36	W
Thermal Resistance Junction-to-Air *1	SOT-23	$R_{\theta JA}$	347	°C/W
Thermal Resistance Junction-to-Lead *1		$R_{\theta JL}$	208	°C/W
Thermal Resistance Junction-to-Case *1		$R_{\theta JC}$	175	°C/W
Operating Junction Temperature Range		T_J	-55 to +150	°C
Storage Temperature Range		T_{STG}	-55 to +150	°C

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Electrical Characteristics (@T$_A$=25°C unless otherwise specified)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
V$_{DSS}$	Drain-Source Breakdown Voltage	V$_{GS}$ = 0V, I$_D$ = -250µA	-50	-	-	V
I$_{DSS}$	Zero Gate Voltage Drain Current	V$_{DS}$ = -50V, V$_{GS}$ = 0V	-	-	-1	µA
I$_{GSS}$	Gate-Body Leakage Current	V$_{GS}$ = ±20V, V$_{DS}$ = 0V	-	-	±10	µA
On Characteristics *2						
R$_{DS(ON)}$	Static Drain-Source On-resistance	V$_{GS}$ = -5V, I$_D$ = -0.1A	-	2.4	8	Ω
		V$_{GS}$ = -10V, I$_D$ = -0.13A	-	2	6	
V$_{GS(TH)}$	Gate Threshold Voltage	V$_{DS}$ = V$_{GS}$, ID = -250µA	-1	-1.5	-2	V
Dynamic Characteristics *3						
C$_{ISS}$	Input Capacitance	V$_{GS}$ = 0V	-	53	-	pF
C$_{OSS}$	Output Capacitance	V$_{DS}$ = -20V	-	11	-	
C$_{RSS}$	Reverse Transfer Capacitance	f = 1.0MHz	-	5	-	
R$_G$	Gate Resistance	f = 1.0MHz, V$_{GS}$ = 0V	-	721	-	Ω
Switching Characteristics						
t$_{d(ON)}$	Turn-on Delay Time	V$_{DS}$ = -15V	-	2.5	-	ns
t$_r$	Turn-on Rise Time	R$_L$ = -50Ω	-	1	-	
t$_{d(OFF)}$	Turn-Off Delay Time	I$_D$ = -2.5A	-	16	-	
t$_f$	Turn-Off Fall Time		-	8	-	
Q$_G$	Total Gate-Charge	V$_{DS}$ = -25V	-	2.5	-	nC
Q$_{GS}$	Gate to Source Charge	V$_{GS}$ = -4.5V	-	0.83	-	
Q$_{GD}$	Gate to Drain (Miller) Charge	I$_D$ = -0.2A	-	0.82	-	
Source-Drain Diode Characteristics						
V$_{SD}$	Diode Forward Voltage *2	I$_S$ = -0.26A, V$_{GS}$ = 0 V	-	-0.9	-1.4	V
I$_S$	Continuous Source Current	T$_C$ = 25°C	-	-	-0.13	A
I$_{SM}$	Pulsed Source Current	T$_C$ = 25°C	-	-	-0.52	A

Notes:

1. Surface mounted on FR4 board, and standard footprint, t ≤ 10 sec

2. Pulse test: pulse width ≤ 300µs, duty cycle ≤ 2%

3. Guaranteed by design, not subject to production

4. Pulse width limited by maximum junction temperature

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Ratings and Characteristic Curves (T$_A$=25°C unless otherwise noted)
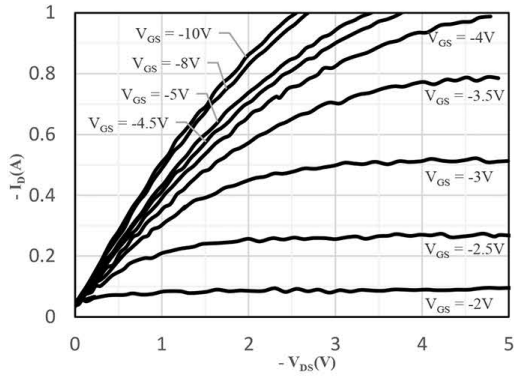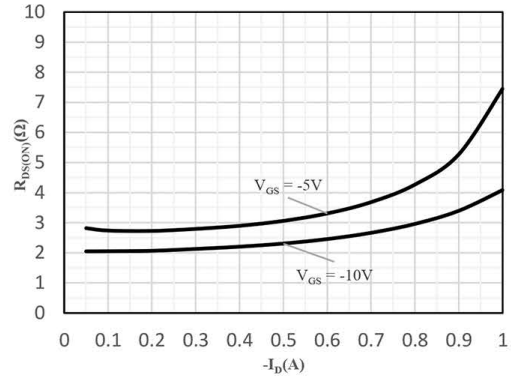
Fig 1 Output Characteristics
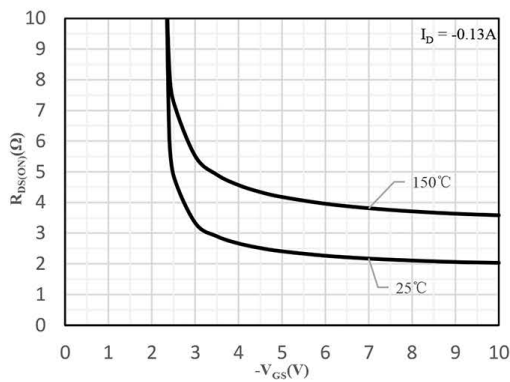
Fig 2 On-Resistance vs. Drain Current and Gate Voltage

Fig 3 On-Resistance vs. Gate-Source Voltage

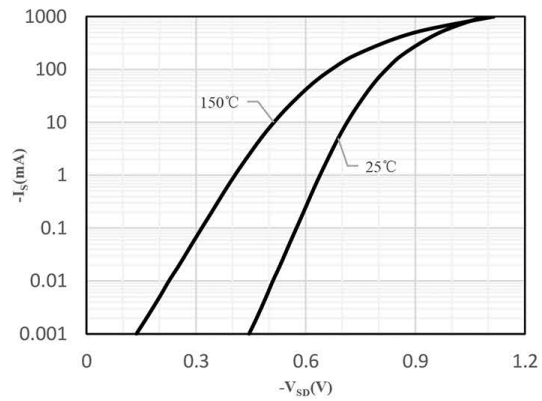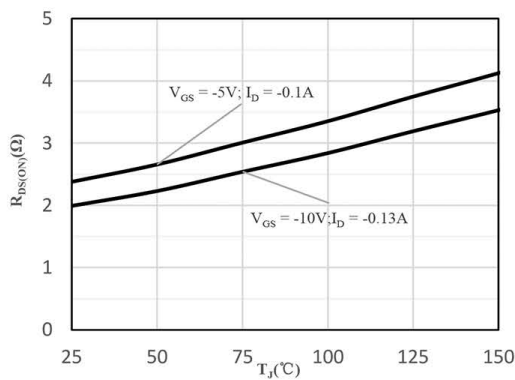**Fig 4 Body-Diode Characteristics**

Fig 5 On-Resistance vs. Junction Temperature

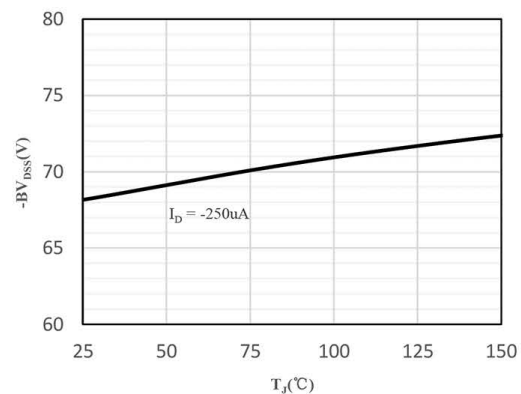**Fig 6 Drain-Source Voltage vs. Junction Temperature**

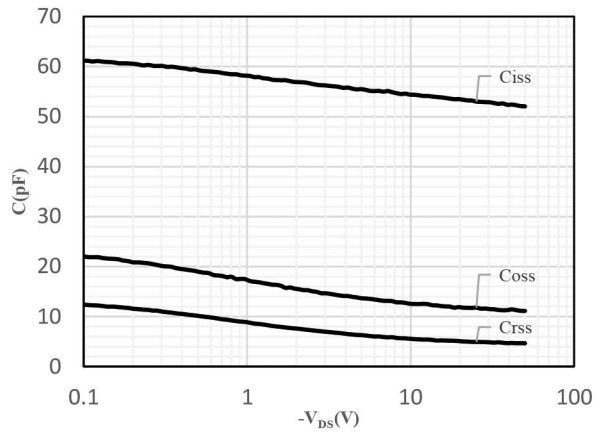Newark.com/multicomp-pro
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Fig 7 Capacitance Characteristics
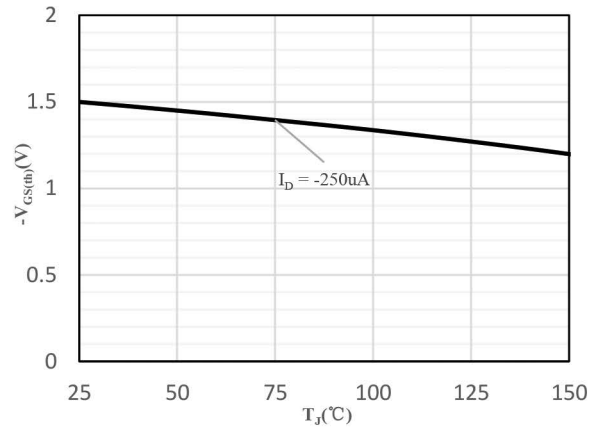
Fig 8 Gate Voltage vs. Junction Temperature
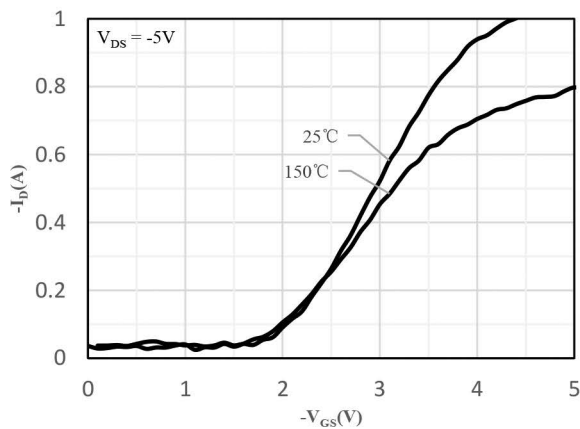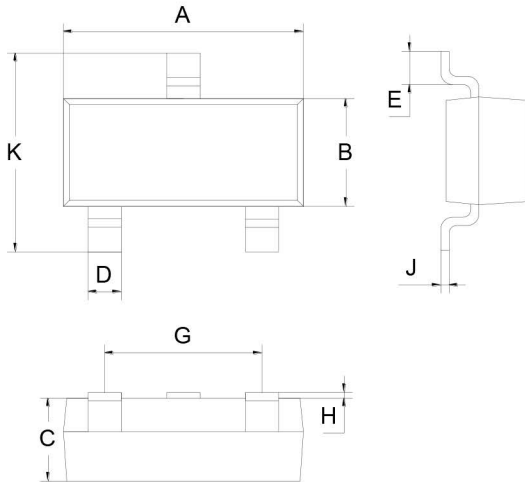

Fig 9 Transfer Characteristics
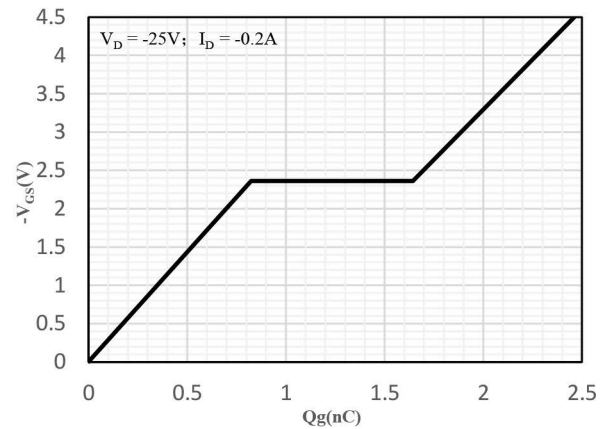
Fig 10 Gate-Charge Characteristics

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Package Outline Dimensions

SOT-23

SOT-23		
Dimension	Min.	Max.
A	2.70	3.10
B	1.10	1.50
C	0.90	1.10
D	0.30	0.50
E	0.35	0.48
G	1.80	2.00
H	0.02	0.10
J	0.05	0.15
K	2.20	2.60

Mounting Pad Layout
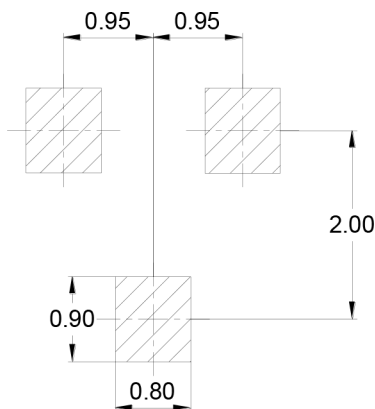
Dimensions : Millimetres

Part Number Table

Description	Part Number
MOSFET, Single, P-Channel, Enhancement Mode, -50V, -130mA, 0.36W, SOT-23	BSS84ES

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