

Product Summary

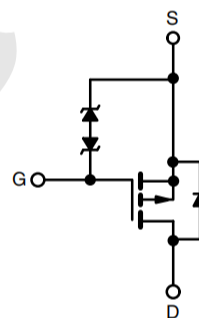
- 60V/-2.8A
 $R_{DS(ON)} = 100m\Omega$ (Typ) @ $V_{GS} = -10V$
- Typical ESD protection: 1500V

Application

- DC-DC Converters.
- Load Switch.
- Power Management.

Package and Pin Configuration

SOT-23



P-Channel MOSFET

Marking: 9CTPM

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

Characteristic			Symbol	Value	Unit
Drain-Source Voltage			V_{DSS}	-60	V
Gate-Source Voltage			V_{GS}	± 20	V
Continuous Drain Current	$V_{GS} = -10V$	$T_C = 25\text{ }^{\circ}C$	I_D	-2.8	A
		$T_C = 125\text{ }^{\circ}C$		-1.6	
Pulsed Drain Current			I_{DM}	-11	A
Continuous Source Current (Body Diode)			I_S	-2.5	A
Single Pulse Avalanche Current		L = 0.1 mH	I_{AS}	-13	A
Single Pulse Avalanche Energy			EAS	8.4	A

Thermal Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

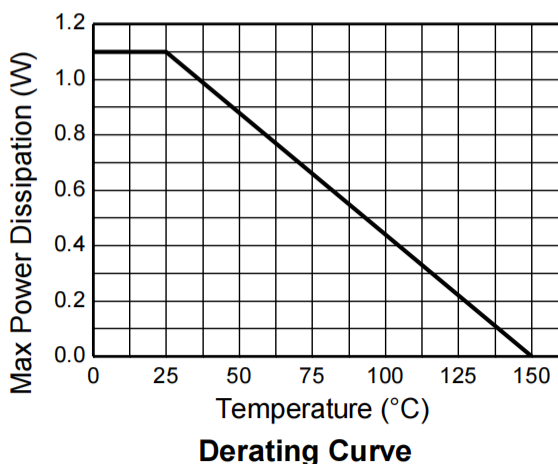
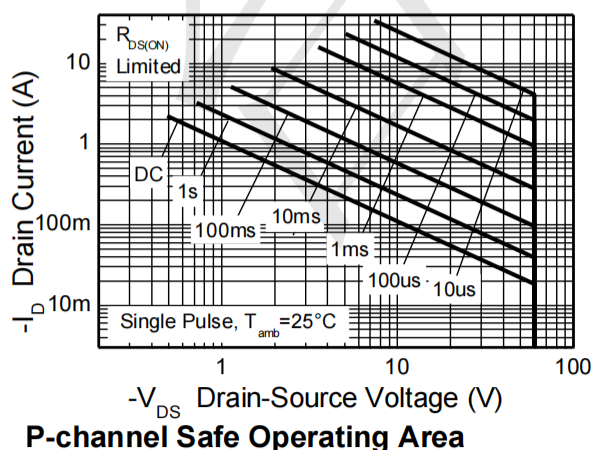
Characteristic		Symbol	Value	Unit
Maximum Power Dissipation ^a	$T_C = 25^\circ\text{C}$	P_D	2	W mW/°C
	$T_C = 125^\circ\text{C}$		0.67	
Junction-to-Ambient	PCB Mount	R_{thJA}	175	°C/W
Junction-to-Foot (Drafin)		R_{thJF}	75	
Operating and Storage Temperature Range		T_J, T_{STG}	-55 to +175	°C

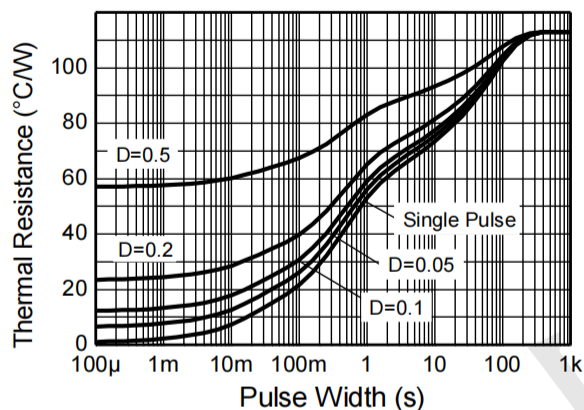
Electrical Characteristics ($T_A = 25^\circ\text{C}$ unless otherwise noted)

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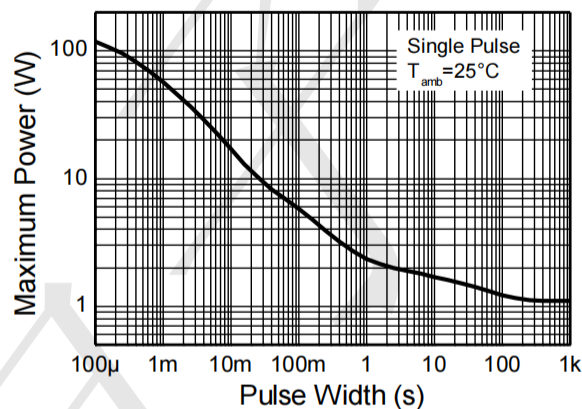
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	-60	—	—	V	$I_D = -250\mu A$, $V_{GS} = 0V$
Zero Gate Voltage Drain Current	I_{DSS}	—	—	-1	μA	$V_{DS} = -48V$, $V_{GS} = 0V$
Gate-Source Leakage	I_{GSS}	—	—	± 100	nA	$V_{GS} = \pm 20V$, $V_{DS} = 0V$
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(th)}$	-1	-1.7	-3	V	$I_D = -250\mu A$, $V_{DS} = V_{GS}$
Static Drain-Source On-Resistance (Note 8)	$R_{DS(ON)}$	—	100	150	m Ω	$V_{GS} = -10V$, $I_D = -3A$
			—	190		$V_{GS} = -4.5V$, $I_D = -1.9A$
Forward Transconductance (Notes 8 & 9)	g_{fs}	—	4.7	—	S	$V_{DS} = -15V$, $I_D = -2.3A$
Diode Forward Voltage (Note 8)	V_{SD}	—	-0.85	-0.95	V	$I_S = -2A$, $V_{GS} = 0V$
Reverse Recovery Time (Note 9)	t_{rr}	—	25.1	—	ns	$I_F = -1.7A$, $di/dt = 100A/\mu s$
Reverse Recovery Charge (Note 9)	Q_{rr}	—	27.2	—	nC	
DYNAMIC CHARACTERISTICS (Note 9)						
Input Capacitance	C_{iss}	—	637	—	pF	$V_{DS} = -30V$, $V_{GS} = 0V$ $f = 1MHz$
Output Capacitance	C_{oss}	—	70	—	pF	
Reverse Transfer Capacitance	C_{rss}	—	53	—	pF	
Total Gate Charge (Note 10)	Q_g	—	9.8	—	nC	$V_{GS} = -5V$
Total Gate Charge (Note 10)	Q_q	—	17.7	—	nC	$V_{GS} = -10V$ $V_{DS} = -30V$ $I_D = -2.3A$
Gate-Source Charge (Note 10)	Q_{gs}	—	1.6	—	nC	
Gate-Drain Charge (Note 10)	Q_{gd}	—	4.4	—	nC	
Turn-On Delay Time (Note 10)	$t_{D(on)}$	—	2.6	—	ns	$V_{DD} = -30V$, $V_{GS} = -10V$ $I_D = -1A$, $R_G \cong 6\Omega$
Turn-On Rise Time (Note 10)	t_r	—	3.4	—	ns	
Turn-Off Delay Time (Note 10)	$t_{D(off)}$	—	26.2	—	ns	
Turn-Off Fall Time (Note 10)	t_f	—	11.3	—	ns	

Typical Performance Characteristics ($T_A = 25^\circ\text{C}$ unless otherwise Specified)

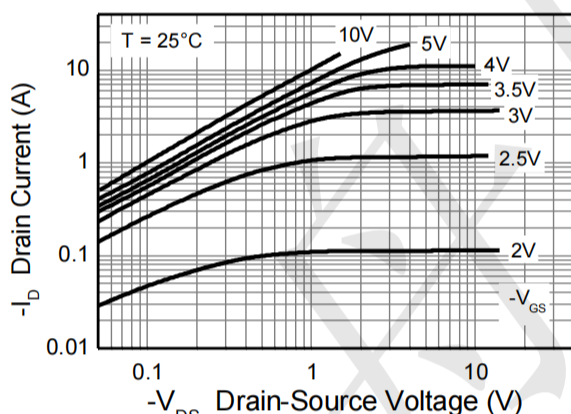




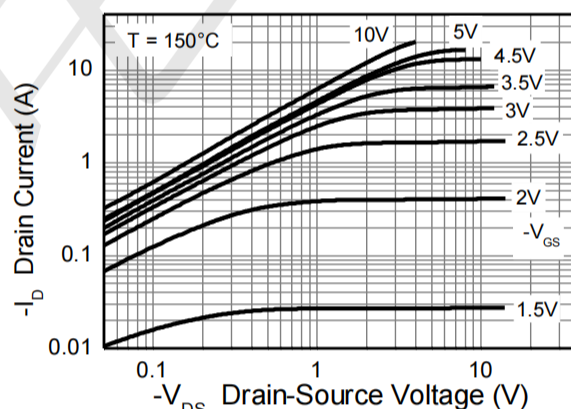
Transient Thermal Impedance



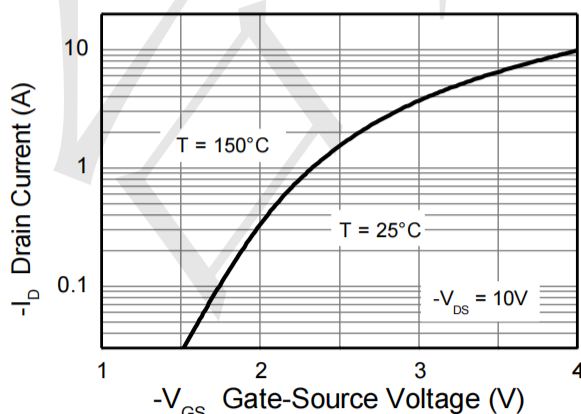
Pulse Power Dissipation



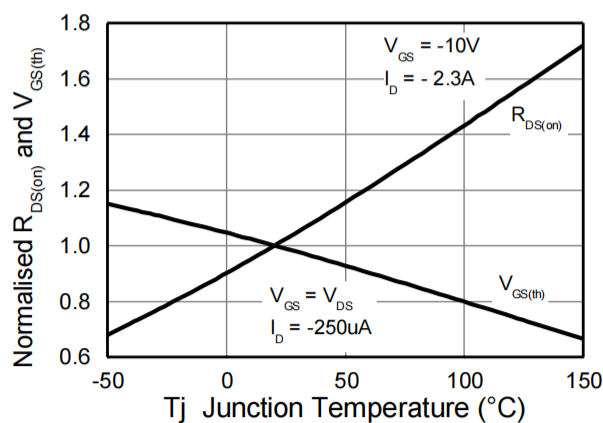
Output Characteristics



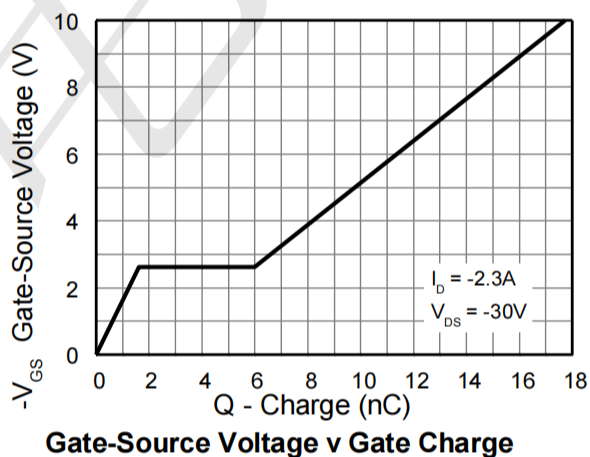
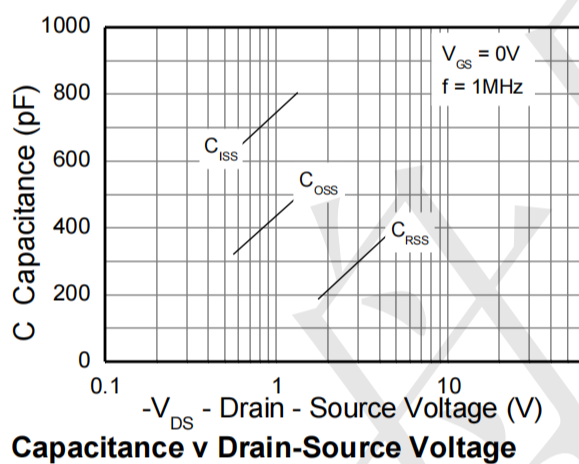
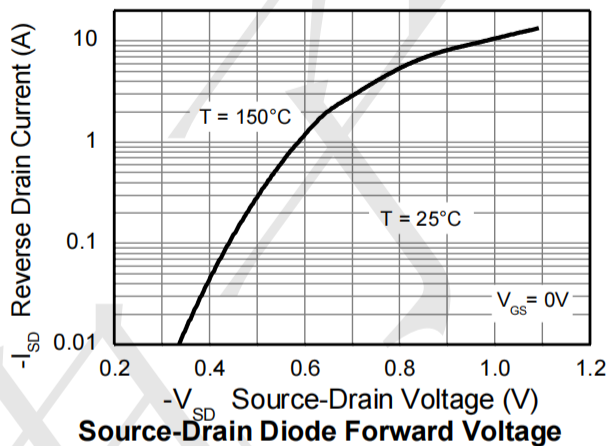
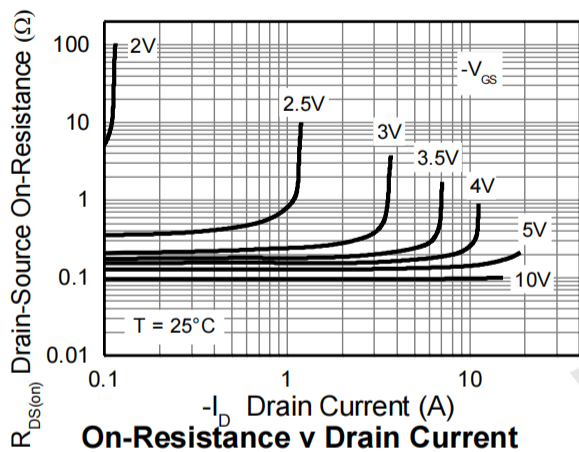
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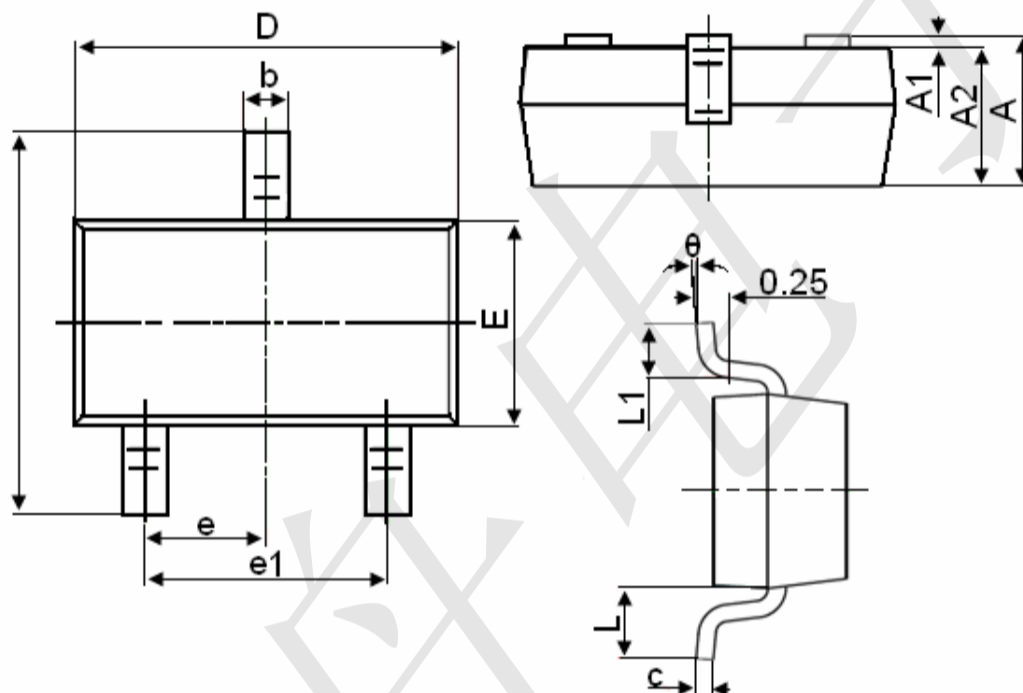
Typical Transfer Characteristics



Normalised Curves v Temperature



SOT-23 Package Information



Symbol	Dimensions in Millimeters	
	MIN.	MAX.
A	0.900	1.150
A1	0.000	0.100
A2	0.900	1.050
b	0.300	0.500
c	0.080	0.150
D	2.800	3.000
E	1.200	1.400
E1	2.250	2.550
e	0.950TYP	
e1	1.800	2.000
L	0.550REF	
L1	0.300	0.500
θ	0°	8°