

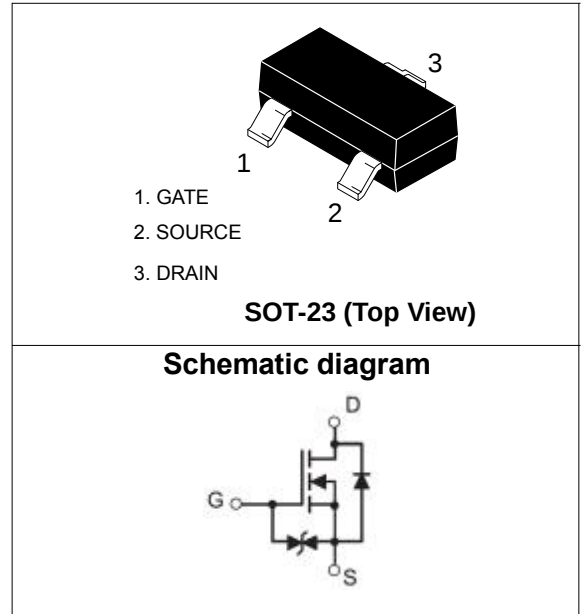
N-Channel MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
20V	220mΩ@4.5V	0.8A
	290mΩ@2.5V	

Features

Lead Free Product is Acquired
 Surface Mount Package
 N-Channel Switch with Low RDS(on)
 Operated at Low Logic Level Gate Drive
 ESD Protected Up to 2.0KV (HBM)



Applications

Load/Power Switching
 Interfacing Switching
 Battery Management for Ultra Small Portable Electronics
 Logic Level Shift

Maximum ratings ($T_a=25^{\circ}\text{C}$ unless otherwise noted)

Parameter		Symbol	Value	Unit
Drain - Source Voltage		V_{DS}	20	V
Gate - Source Voltage		V_{GS}	± 12	V
Continuous Drain Current	$T_C = 25^{\circ}\text{C}$	I_D	0.8	A
Continuous Drain Current	$T_A = 75^{\circ}\text{C}$		0.4	A
Pulsed Drain Current ¹		I_{DM}	2	A
Power Dissipation ²		P_D	150	mW
Thermal Resistance from Junction to Ambient ²		$R_{\theta JA}$	833	$^{\circ}\text{C/W}$
Junction Temperature		T_J	150	$^{\circ}\text{C}$
Storage Temperature		T_{STG}	-55~ +150	$^{\circ}\text{C}$

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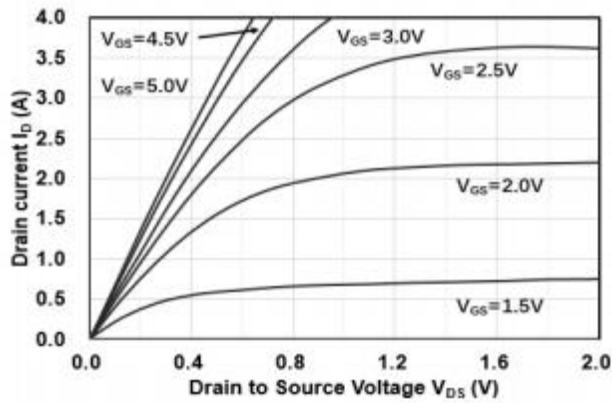
Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Static Characteristics						
Drain - Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	20			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 20V, V_{GS} = 0V$			1	μA
Gate - Body Leakage Current	I_{GSS}	$V_{GS} = \pm 10V, V_{DS} = 0V$			± 10	μA
Gate Threshold Voltage ³	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	0.4	0.7	1	V
Drain-source On-resistance ³	$R_{DS(on)}$	$V_{GS}= 4.5V, I_D=0.5A$		220	350	m Ω
		$V_{GS}= 2.5V, I_D=0.45A$		290	450	
		$V_{GS}= 1.8V, I_D=0.4A$		450	700	
Dynamic Characteristics ⁴						
Input Capacitance	C_{iss}	$V_{DS}= 10V, V_{GS}=0V, f=1MHz$		33		PF
Output Capacitance	C_{oss}			20		
Reverse Transfer Capacitance	C_{rss}			10		
Gate Resistance	R_g	$f=1MHz, \text{Open Drain}$		50		Ω
Switching Characteristics ⁴						
Total Gate Charge	Q_g	$V_{GS}=4.5V, V_{DS}=10V, I_D=0.5A$		0.8		nC
Gate- source Charge	Q_{gs}			0.3		
Gate- drain Charge	Q_{gd}			0.15		
Turn-on Delay Time	$t_{d(on)}$	$V_{GS}=4.5V, V_{DD}=10V, R_G=10\Omega, I_D=500mA$		4		ns
Turn-on Rise Time	t_r			18.8		
Turn-off Delay Time	$t_{d(off)}$			10		
Turn-off Fall Time	t_f			23		
Source - Drain Diode Characteristics						
Diode Forward Voltage ³	V_{SD}	$V_{GS} = 0V, I_S = 0.5A$			1.2	V

Notes :

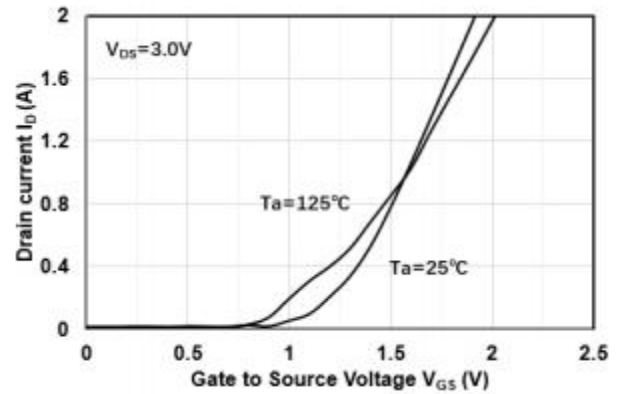
1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. This test is performed with no heat sink at $T_a = 25^{\circ}\text{C}$.
3. Pulse Test : Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 0.5\%$.
4. These parameters have no way to verify.

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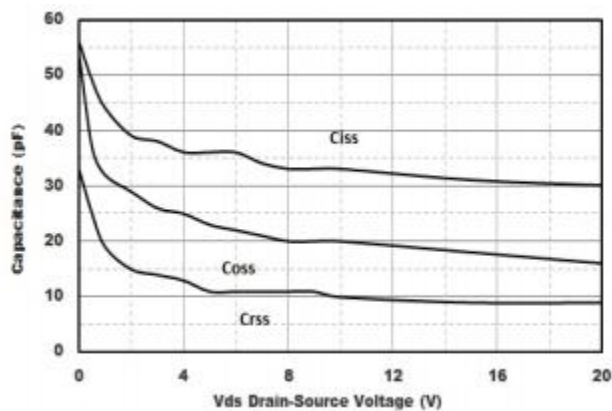
Typical Characteristic



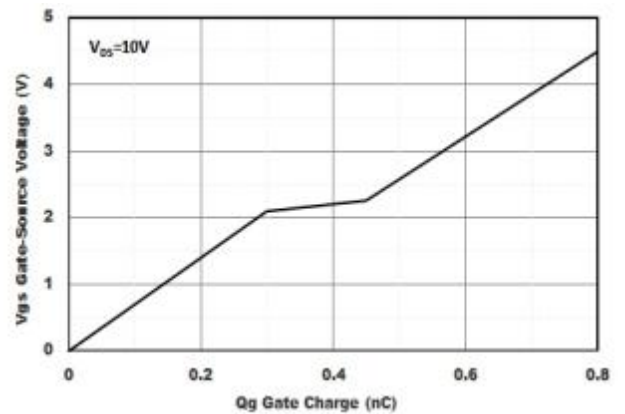
Output Characteristics



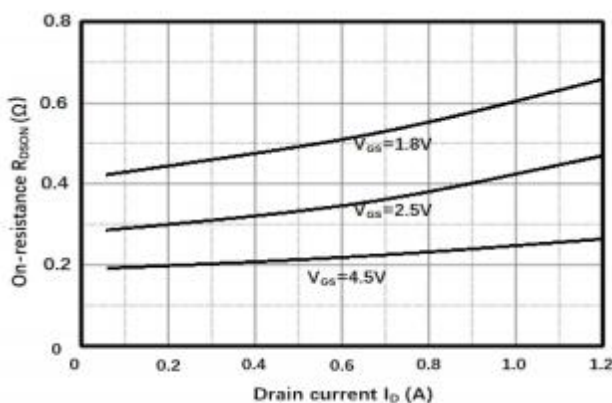
Transfer Characteristics



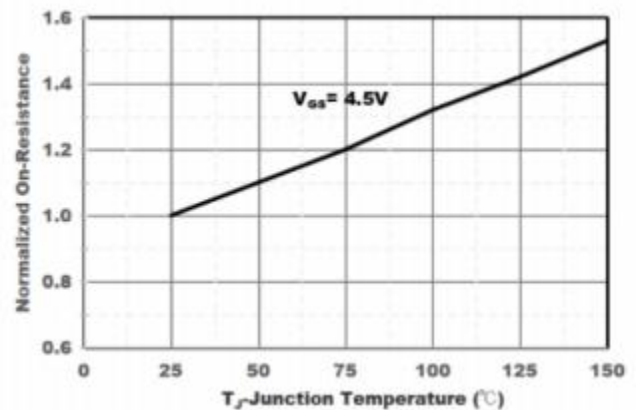
Capacitance Characteristics



Gate Charge

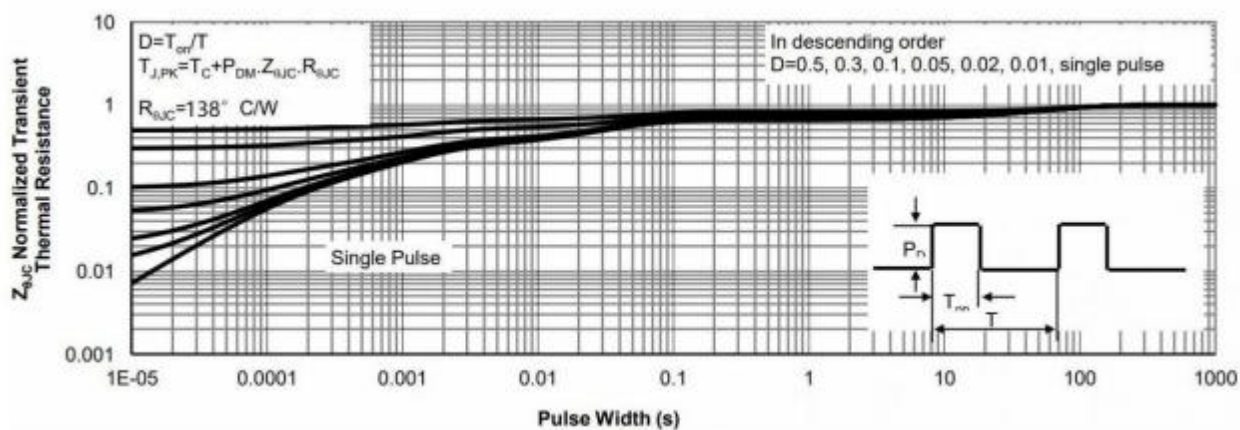
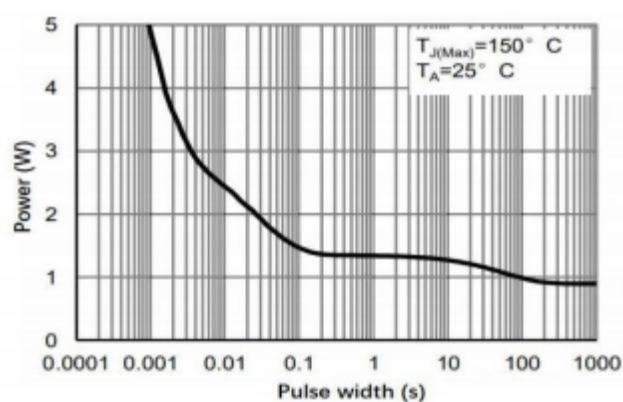
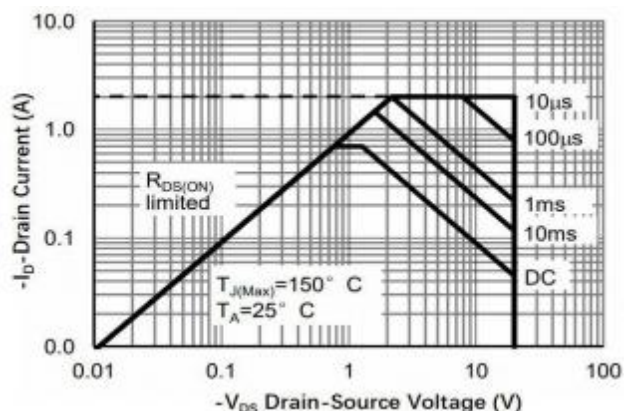


Drain-Source on Resistance



Drain-Source on Resistance

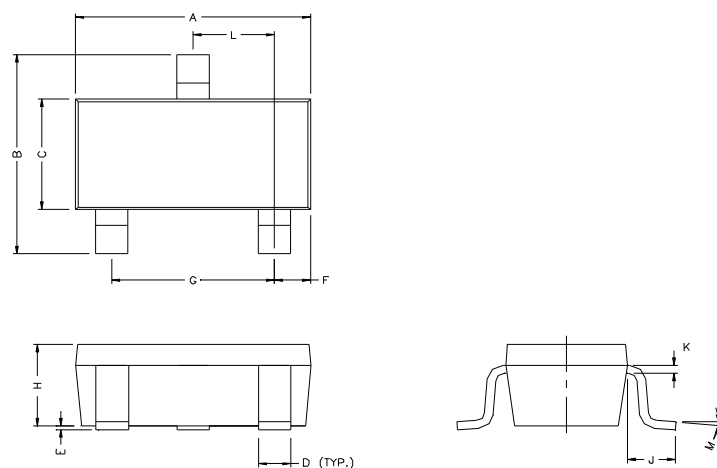
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Dimension outline Unit:mm

SOT23



REF.	Millimeter		REF.	Millimete	
	Min.	Max.		Min.	Max.
A	2.80	3.00	G	1.80	2.00
B	2.30	2.50	H	0.90	1.1
C	1.20	1.40	K	0.10	0.20
D	0.30	0.50	J	0.35	0.70
E	0	0.10	L	0.92	0.98
F	0.45	0.55	M	0°	10°

SOT-23 Suggested Pad Layout

