

Feature

- Highpowerandcurrenthandingcapability
- Surfacemountpackage
- ESDprotected2KV

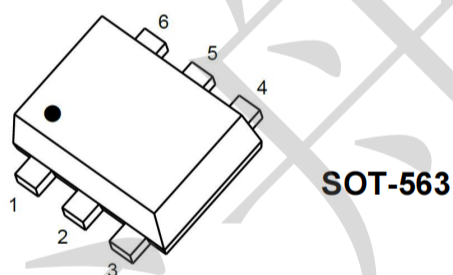
Application

- BatterySwitch
- DC/DCCConverter

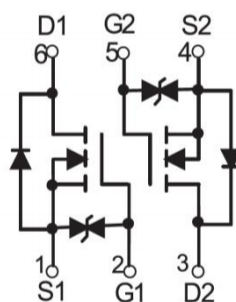
ProductSummary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
20V	250mΩ@4.5V	0.75A
	350mΩ@2.5V	

Package



Circuitdiagram



OrderInformation

Device	Package	Unit/Tape
TPM20NB1EX6-1	SOT-563	3000

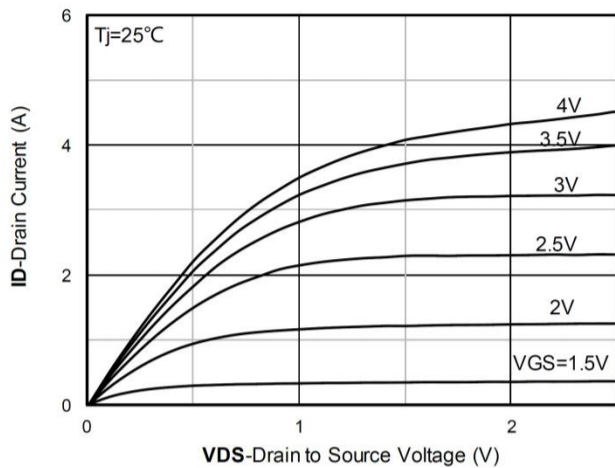
Absolutemaximumratings($T_a=25^{\circ}\text{C}$, unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DSS}	20	V
Gate-Source Voltage	V_{GSS}	± 12	V
Continuous Drain Current	I_{D}	0.75	A
Pulse Drain Current Tested	I_{DM}	3	A
Power Dissipation	P_{D}	150	mW
Thermal Resistance Junction-to-Ambient	$R_{\theta\text{JA}}$	833	$^{\circ}\text{C/W}$
Storage Temperature Range	T_{STG}	-55 to 150	$^{\circ}\text{C}$
Operating Junction Temperature Range	T_{J}	-55 to 150	$^{\circ}\text{C}$

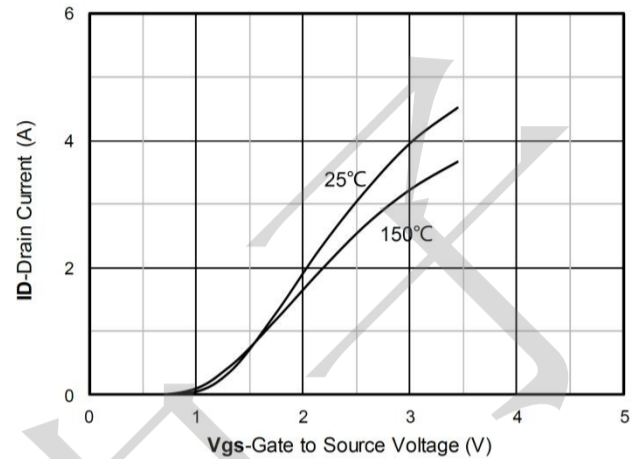
Electricalcharacteristics($T_a=25^{\circ}\text{C}$, unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V$, $I_D=250\mu A$	20	-	-	V
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=16V$, $V_{GS}=0V$	-	-	1	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 12V$, $V_{DS}=0V$	-	-	± 10	μA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$, $I_D=250\mu A$	0.30	0.65	1.00	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=4.5V$, $I_D=500mA$	-	250	380	m Ω
		$V_{GS}=2.5V$, $I_D=200mA$	-	350	450	
Dynamic characteristics						
Input Capacitance	C_{iss}	$V_{DS}=10V$, $V_{GS}=0V$, $f=1MHz$	-	35	-	pF
Output Capacitance	C_{oss}		-	19	-	
Reverse Transfer Capacitance	C_{rss}		-	9	-	
Total Gate Charge	Q_g	$V_{DS}=10V$, $V_{GS}=4.5V$, $I_D=500mA$	-	0.8	-	nC
Gate-Source Charge	Q_{gs}		-	0.3	-	
Gate-Drain Charge	Q_{gd}		-	0.16	-	
Switching Characteristics						
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=10V$ $V_{GS}=4.5V$, $R_G=10\Omega$, $I_D=500mA$	-	4	-	nS
Turn-On Rise Time	t_r		-	19	-	
Turn-Off Delay Time	$t_{d(off)}$		-	10	-	
Turn-Off Fall Time	t_f		-	21	-	
Source-Drain Diode characteristics						
Diode Forward Voltage	V_{SD}	$V_{GS}=0V$, $I_S=1A$, $T_J=25^{\circ}C$	-	-	1.2	V

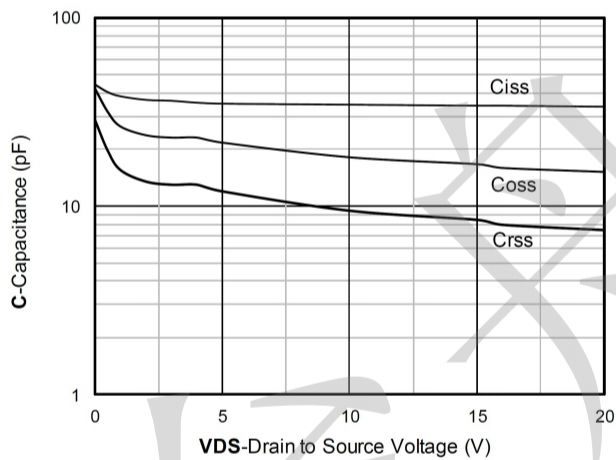
Typical Characteristics



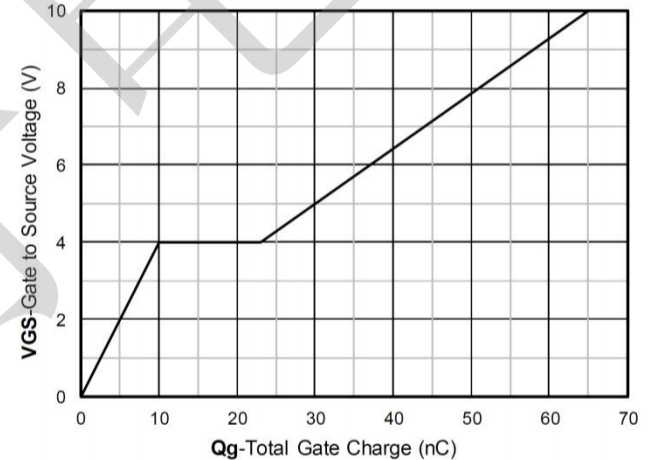
Output Characteristics



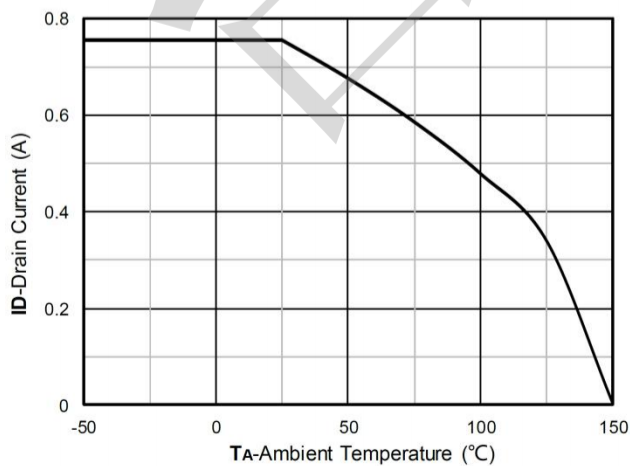
Transfer Characteristics



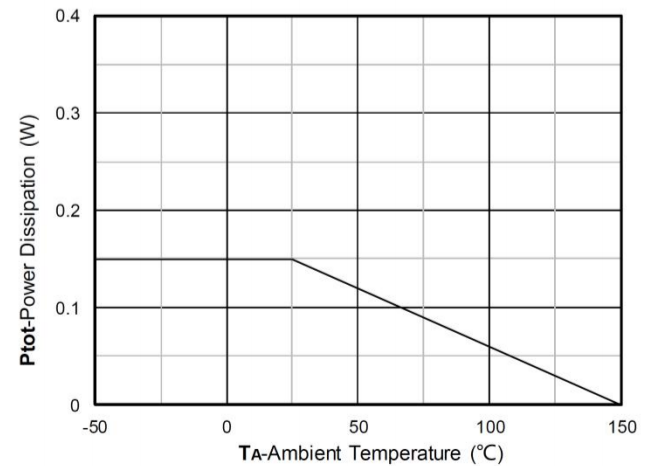
Capacitance Characteristics



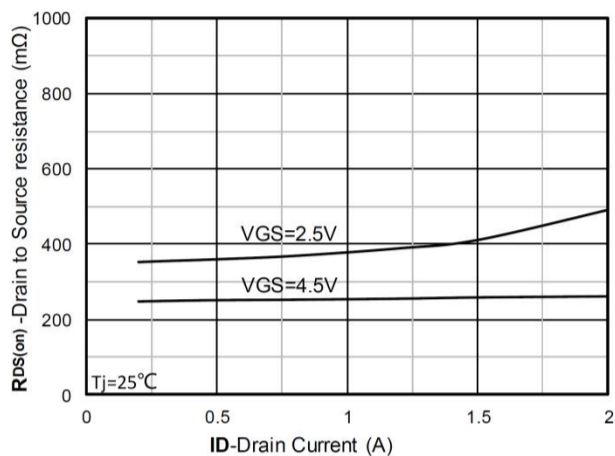
Gate Charge



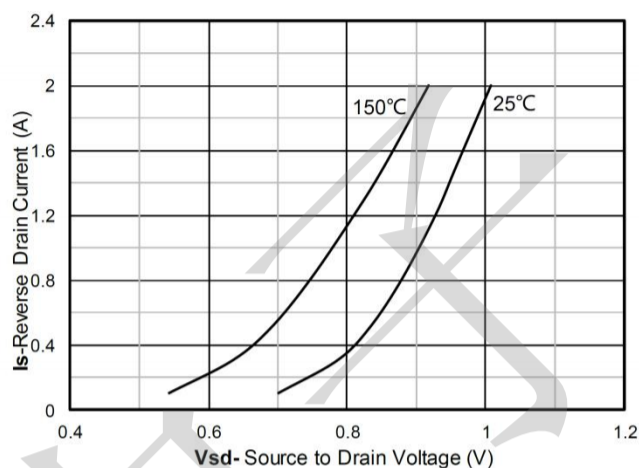
Current dissipation



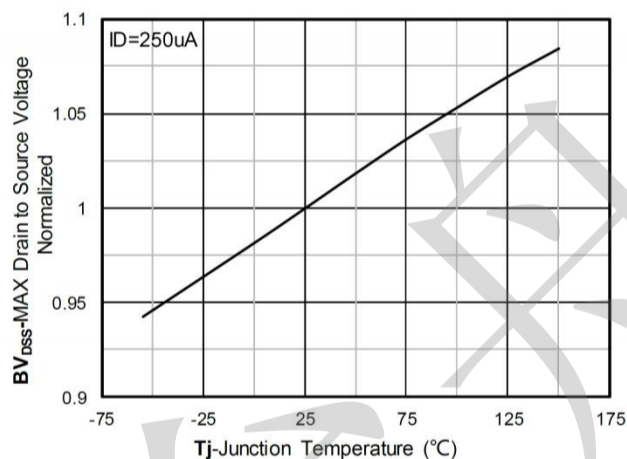
Power dissipation



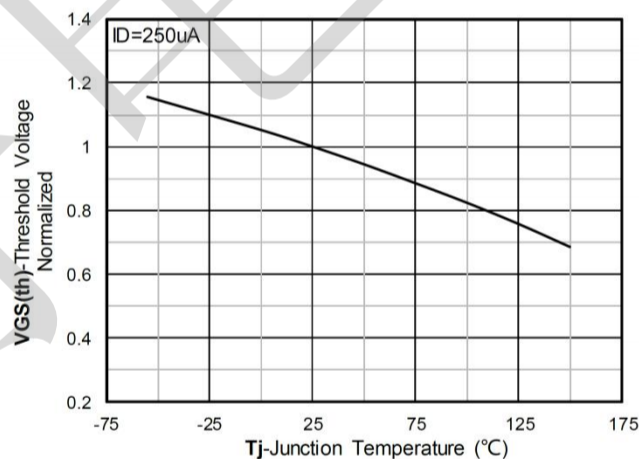
$R_{DS(on)}$ VS Drain Current



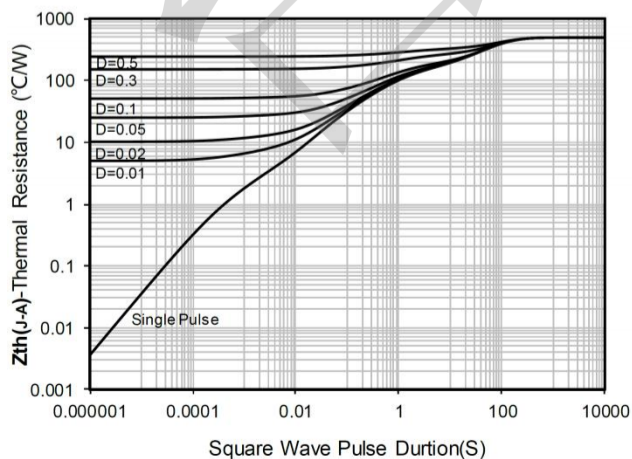
Forward characteristics of reverse diode



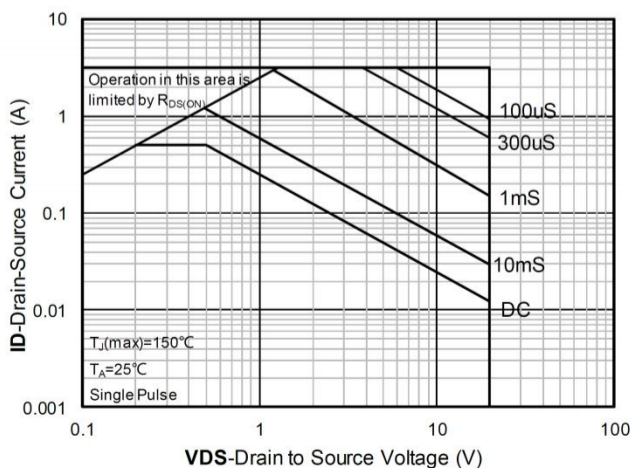
Normalized breakdown voltage



Normalized Threshold voltage



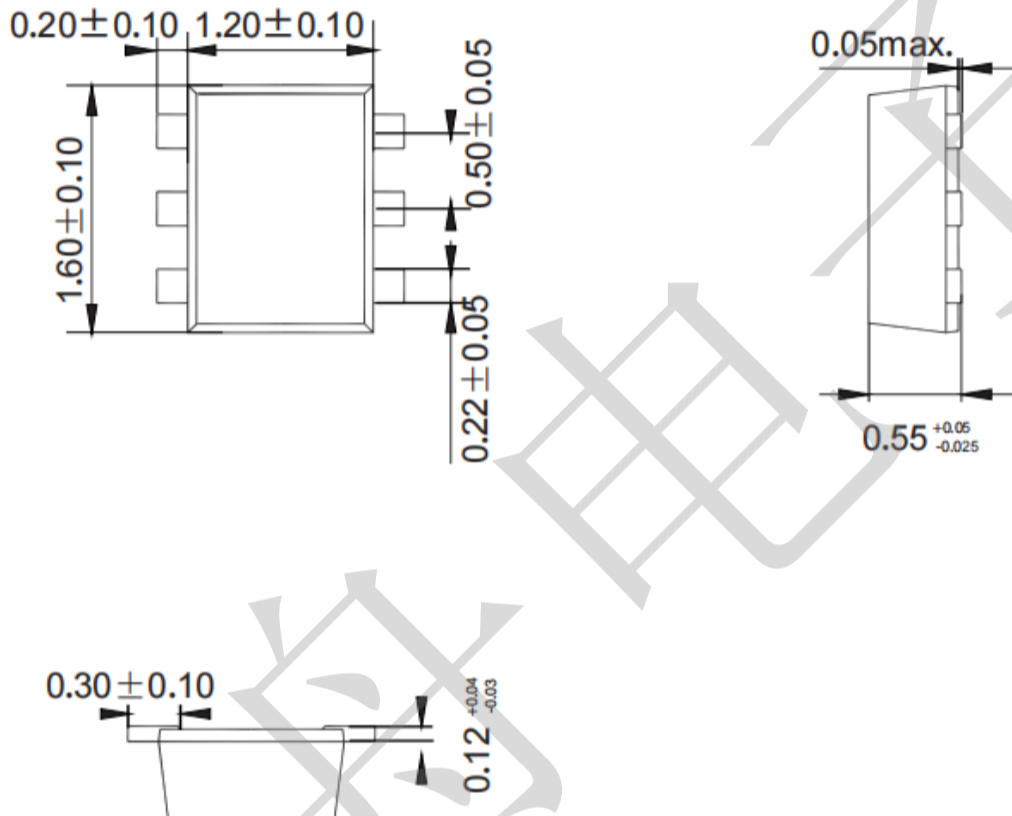
Maximum Transient Thermal Impedance



Safe Operation Area

Package Outline Dimensions (unit:mm)

SOT-563



Mounting Pad Layout (unit: mm)

