

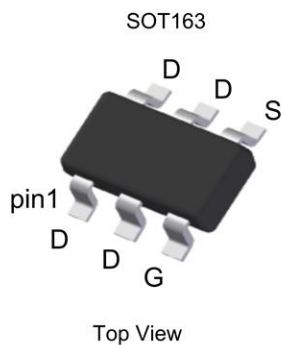
**Product Summary**

- 20V/-7 A
- $R_{DS(ON)} = 22m\Omega(Typ.)@V_{GS}=-4.5V$
- $R_{DS(ON)} = 26m\Omega(Typ.)@V_{GS}=-2.5V$

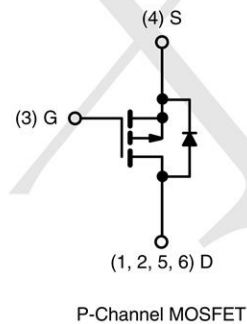
**Application**

- Battery Pack
- Portable Devices

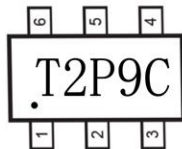
**Package and Pin Configuration**



**Circuit diagram**



Marking:



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

PARAMETER	SYMBOL	LIMIT	UNIT
Drain-Source Voltage	$V_{DS}$	-20	V
Gate-Source Voltage	$V_{GS}$	$\pm 12$	V
Continuous Drain Current	$I_D$	$T_C = 25^{\circ}C$	-7
		$T_C = 100^{\circ}C$	-4.9
Pulsed Drain Current <sup>(Note 1)</sup>	$I_{DM}$	-26	A
Total Power Dissipation	$P_{DTOT}$	1.56	W
Operating Junction Temperature	$T_J$	150	$^{\circ}C$
Operating Junction and Storage Temperature Range	$T_J, T_{STG}$	- 55 to +150	$^{\circ}C$

**Thermal Characteristic**

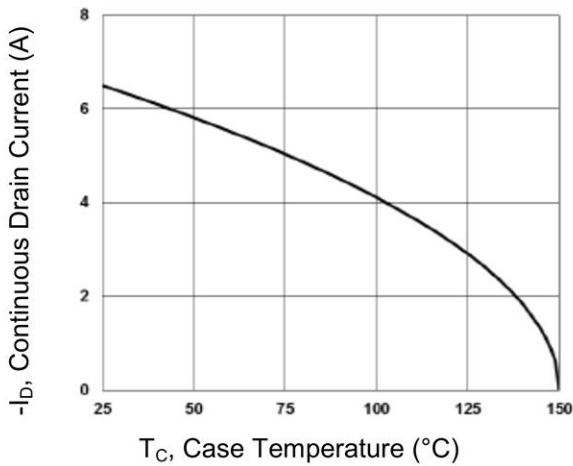
PARAMETER	SYMBOL	LIMIT	UNIT
Junction to Ambient Thermal Resistance	$R_{\theta JA}$	80	$^{\circ}C/W$

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

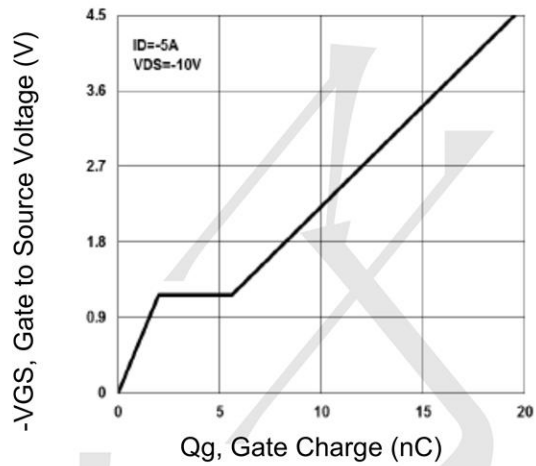
PARAMETER	CONDITIONS	SYMBOL	MIN	TYP	MAX	UNIT
<b>Static</b> (Note 2)						
Drain-Source Breakdown Voltage	$V_{GS} = 0V, I_D = -250\mu A$	$BV_{DSS}$	-20	--	--	V
Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = -250\mu A$	$V_{GS(TH)}$	-0.4	--	-1.1	V
Gate Body Leakage	$V_{GS} = \pm 12V, V_{DS} = 0V$	$I_{GSS}$	--	--	$\pm 100$	nA
Zero Gate Voltage Drain Current	$V_{DS} = -20V, V_{GS} = 0V$	$I_{DSS}$	--	--	-1	$\mu A$
	$V_{DS} = -16V, T_J = 125^\circ\text{C}$		--	--	-10	
Drain-Source On-State Resistance	$V_{GS} = -4.5V, I_D = -5A$	$R_{DS(on)}$	--	22	26	m $\Omega$
	$V_{GS} = -2.5V, I_D = -4A$		--	26	32	
	$V_{GS} = -1.8V, I_D = -3A$		--	32	40	
Forward Transconductance	$V_{DS} = -10V, I_S = -5A$	$g_{fs}$	--	15	--	S
<b>Dynamic</b> (Note 3)						
Total Gate Charge	$V_{DS} = -10V, I_D = -5A,$ $V_{GS} = -4.5V$	$Q_g$	--	19.5	--	nC
Gate-Source Charge		$Q_{gs}$	--	2	--	
Gate-Drain Charge		$Q_{gd}$	--	3.6	--	
Input Capacitance	$V_{DS} = -15V, V_{GS} = 0V,$ $F = 1.0\text{MHz}$	$C_{iss}$	--	1670	--	pF
Output Capacitance		$C_{oss}$	--	220	--	
Reverse Transfer Capacitance		$C_{rss}$	--	120	--	
<b>Switching</b>						
Turn-On Delay Time	$V_{DD} = -10V, I_D = -1A,$ $V_{GS} = -4.5V,$ $R_{GEN} = 25\Omega$	$t_{d(on)}$	--	10.4	--	ns
Turn-On Rise Time		$t_r$	--	37.5	--	
Turn-Off Delay Time		$t_{d(off)}$	--	89.1	--	
Turn-Off Fall Time		$t_f$	--	24.6	--	
<b>Source-Drain Diode</b>						
Forward Voltage	$V_{GS} = 0V, I_S = -1A$	$V_{SD}$	--	--	-1	V
Continuous Forward Current	Integral reverse diode in the MOSFET	$I_S$	--	--	-7	A
Pulse Forward Current		$I_{SM}$	--	--	-26	A

Typical Electrical and Thermal Characteristics

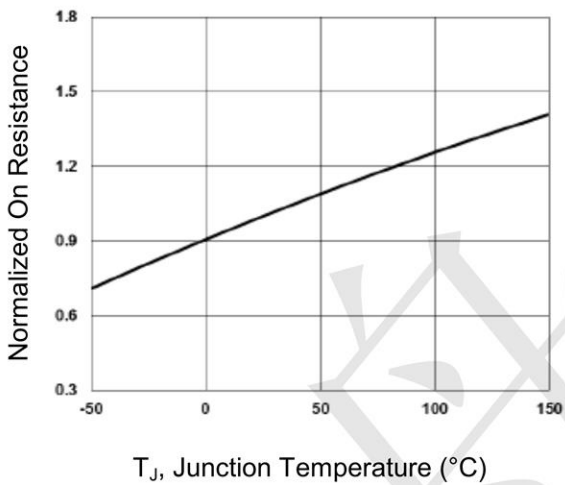
Continuous Drain Current vs.  $T_c$



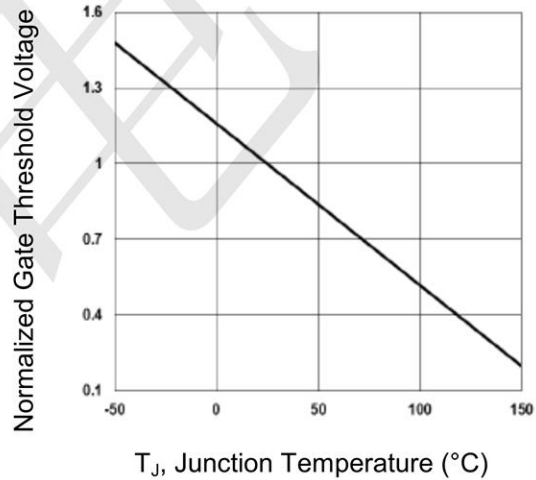
Gate Charge



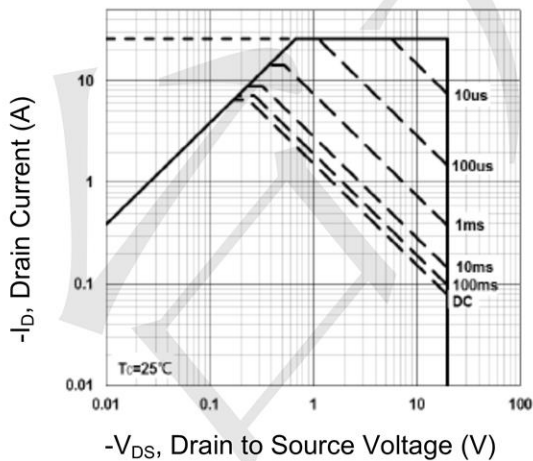
On-Resistance vs. Junction Temperature



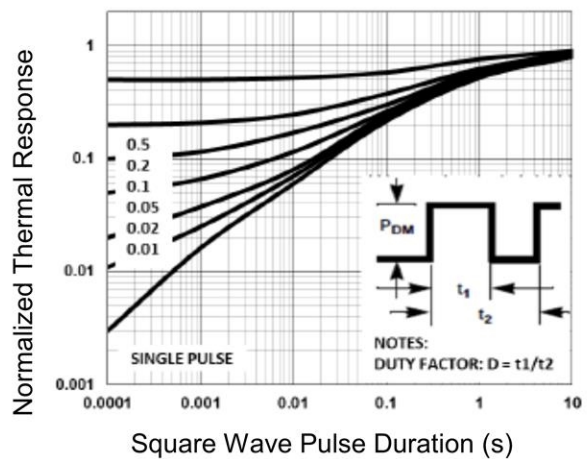
Threshold Voltage vs. Junction Temperature



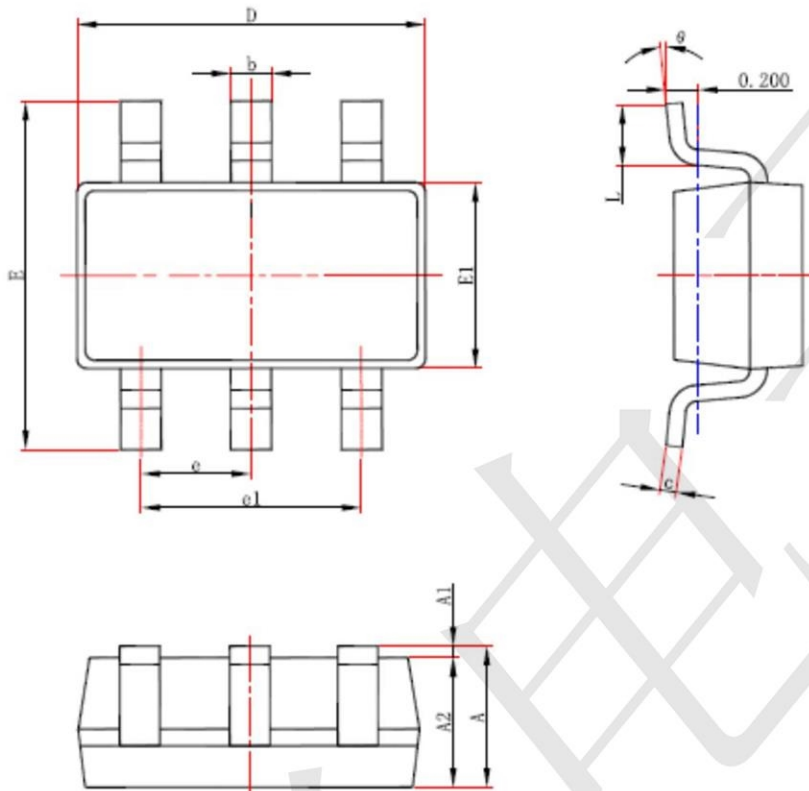
Maximum Safe Operating Area



Normalized Thermal Transient Impedance Curve



SOT163 Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E1	1.500	1.700	0.059	0.067
E	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°

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