

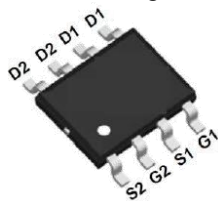
## 20V, 17mΩ, 6A, N-Channel Enhancement Mode Power MOSFET

### 1.Features

- ◆ High Power and current handing capability
- ◆ Lead free product is acquired
- ◆ Surface Mount Package

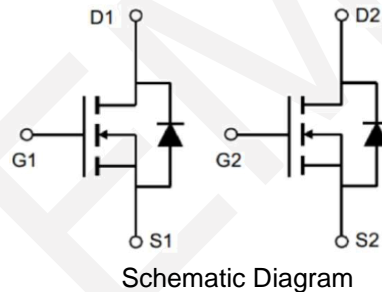
### 2.Applications

- ◆ Battery protection
- ◆ Load Switch
- ◆ Power management



SOP8  
Pin Description

V <sub>DS</sub> Typ	R <sub>DS(on)</sub> Typ.	I <sub>D</sub> Max.
20V	34mΩ @ 2.5V	6A
	24mΩ @ 3V	
	17mΩ @ 4.5V	
	16mΩ @ 7.4V	
	15mΩ @ 10V	



### 3.Absolute Max Ratings at Ta=25°C (Note1)

Parameter	Symbol	Maximum	Units
Drain to Source Voltage	V <sub>DSS</sub>	20	V
Gate to Source Voltage	V <sub>GSS</sub>	±12	V
Drain Current-Continuous	I <sub>D</sub>	6	A
Drain Current (Pulse)	I <sub>DM</sub>	17	A
Maximum Power Dissipation	P <sub>D</sub>	1.5	W
Operating Junction and Storage Temperature Range	T <sub>j</sub> , T <sub>stg</sub>	-55 to +150	°C

Note 1: Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

### 4.Thermal Characteristic

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction to Ambient (Note 2)	R <sub>θJA</sub>	68	°C/W

Note 2: When mounted on 1 inch square copper board t ≤ 10sec The value in any given application depends on the user's specific board design.

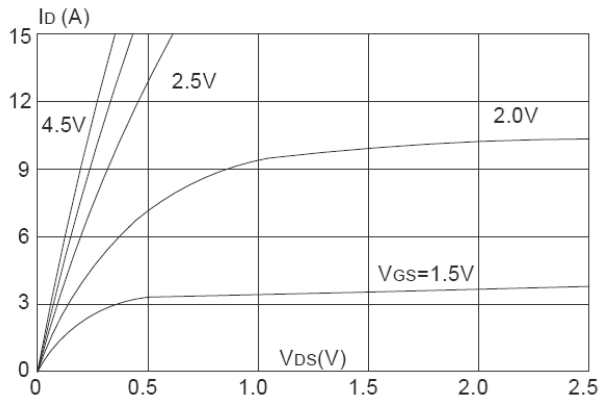
**5. Electrical Characteristics at Ta=25°C (Note 3)**

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Drain to Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D = 250\mu A, V_{GS} = 0V$	20			V
Zero-Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = 16V, V_{GS} = 0V$			1	$\mu A$
Gate-Body Leakage Current	$I_{GSS}$	$V_{GS} = \pm 12V, V_{DS} = 0V$			$\pm 10$	$\mu A$
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_{DS}=250\mu A$	0.45	0.9	1.25	V
Drain to Source On-State Resistance	$R_{DS(on)}$	$I_D = 5A, V_{GS} = 2.5V$		34		$m\Omega$
		$I_D = 5A, V_{GS} = 3V$		24		$m\Omega$
		$I_D = 6A, V_{GS} = 4.5V$		17		$m\Omega$
		$I_D = 6A, V_{GS} = 7.4V$		16		$m\Omega$
		$I_D = 6A, V_{GS} = 10V$		15		$m\Omega$
Diode Forward Voltage	$V_{SD}$	$I_S = 1A, V_{GS} = 0$			1	V
Input Capacitance	$C_{iss}$	$V_{GS}=0V,$ $V_{DS}=10V,$ Frequency=1.0MHz		358		pF
Output Capacitance	$C_{oss}$			69.3		pF
Reverse Transfer Capacitance	$C_{rss}$			58.5		pF
Turn-ON Delay Time	$t_{d(on)}$	$V_{DS} = 10V,$ $V_{GS} = 4.5V,$ $R_{GEN} = 3\Omega,$ $I_D=6A$		16		ns
Turn-ON Rise Time	$t_r$			51		ns
Turn-OFF Delay Time	$t_{d(off)}$			21		ns
Turn-ON Fall Time	$t_f$			19		ns
Total Gate Charge	$Q_g$		$V_{DS} = 10V,$ $V_{GS} = 4.5V,$ $I_D = 3A$		5.6	
Gate-Source Charge	$Q_{gs}$			0.8		nC
Gate-Drain Charge	$Q_{gd}$			1		nC

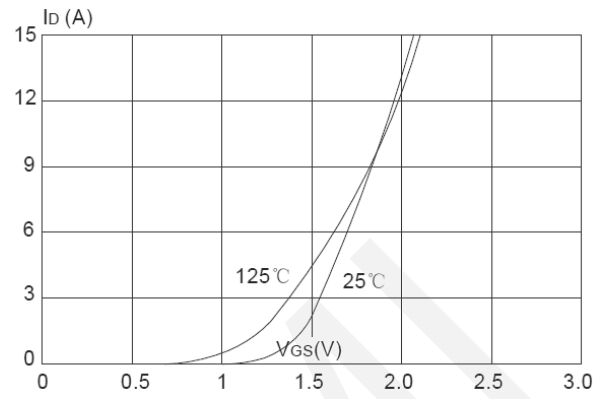
Note 3: Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.



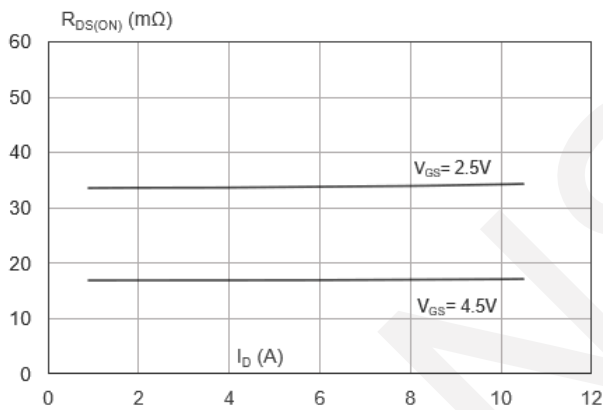
## 6. Typical electrical and thermal characteristics



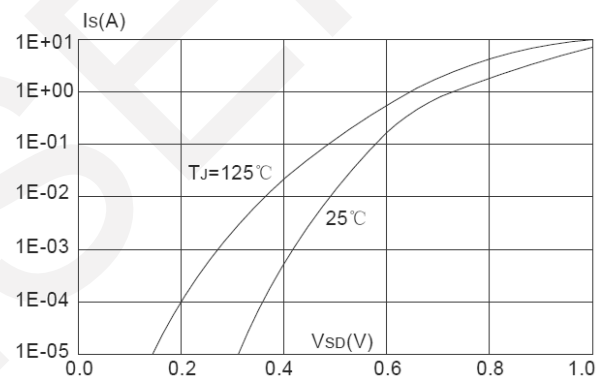
Output Characteristics



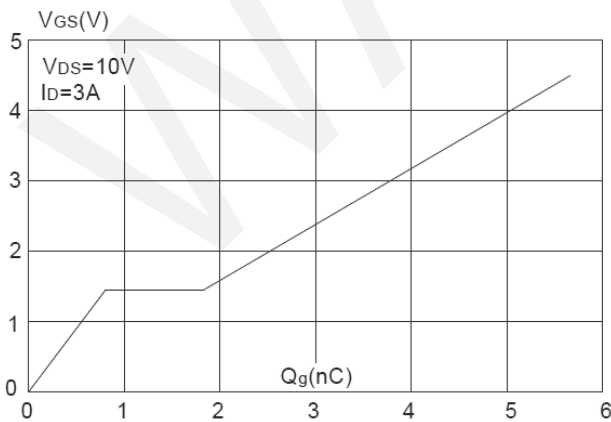
Transfer Characteristics



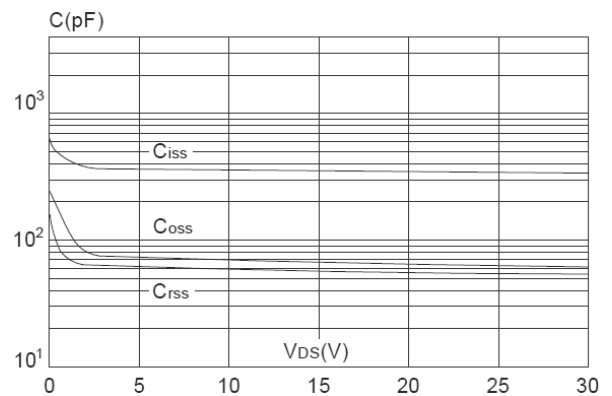
On-Resistance vs. Drain Current



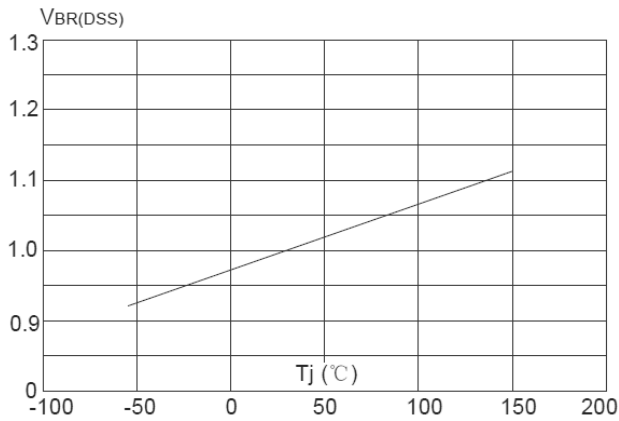
Body Diode Characteristics



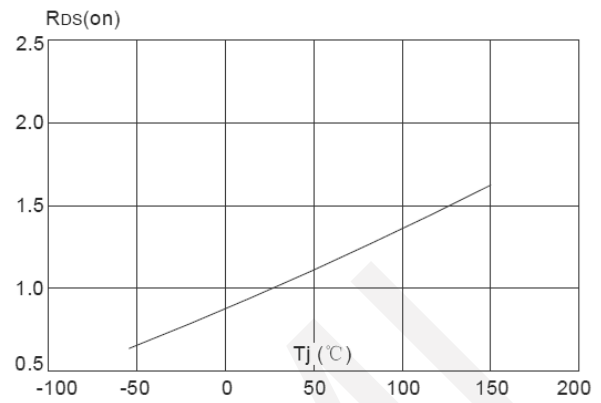
Gate Charge Characteristics



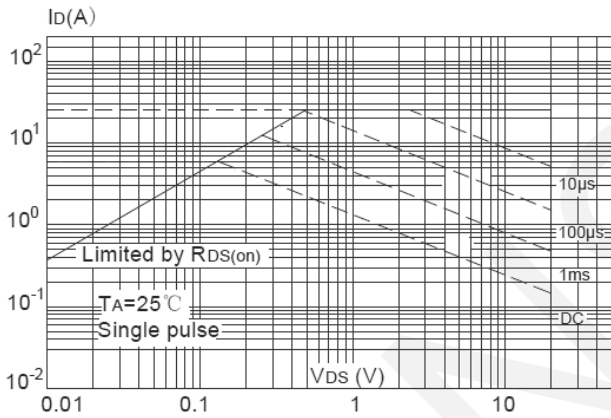
Capacitance Characteristics



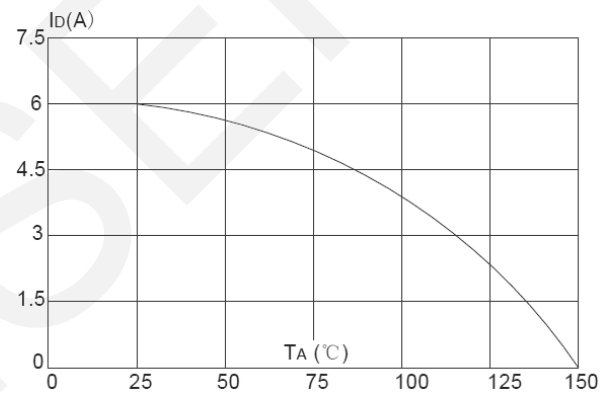
**Breakdown Voltage vs. Junction Temperature**



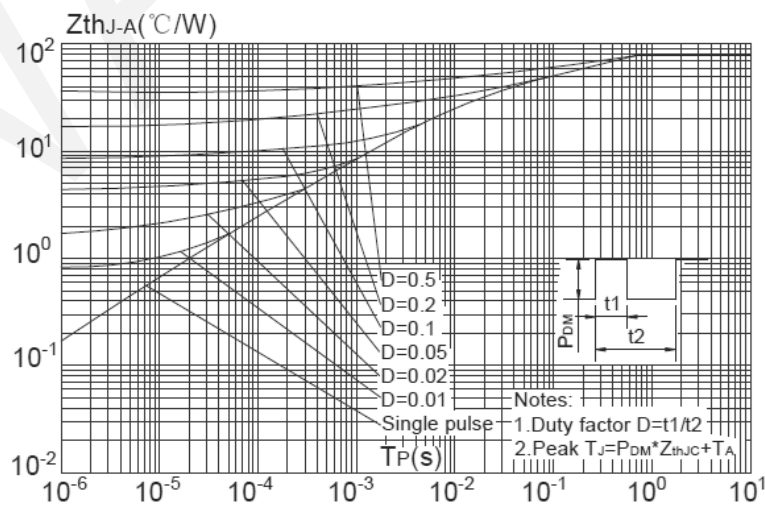
**On Resistance vs. Junction Temperature**



**Maximum Safe Operating Area**



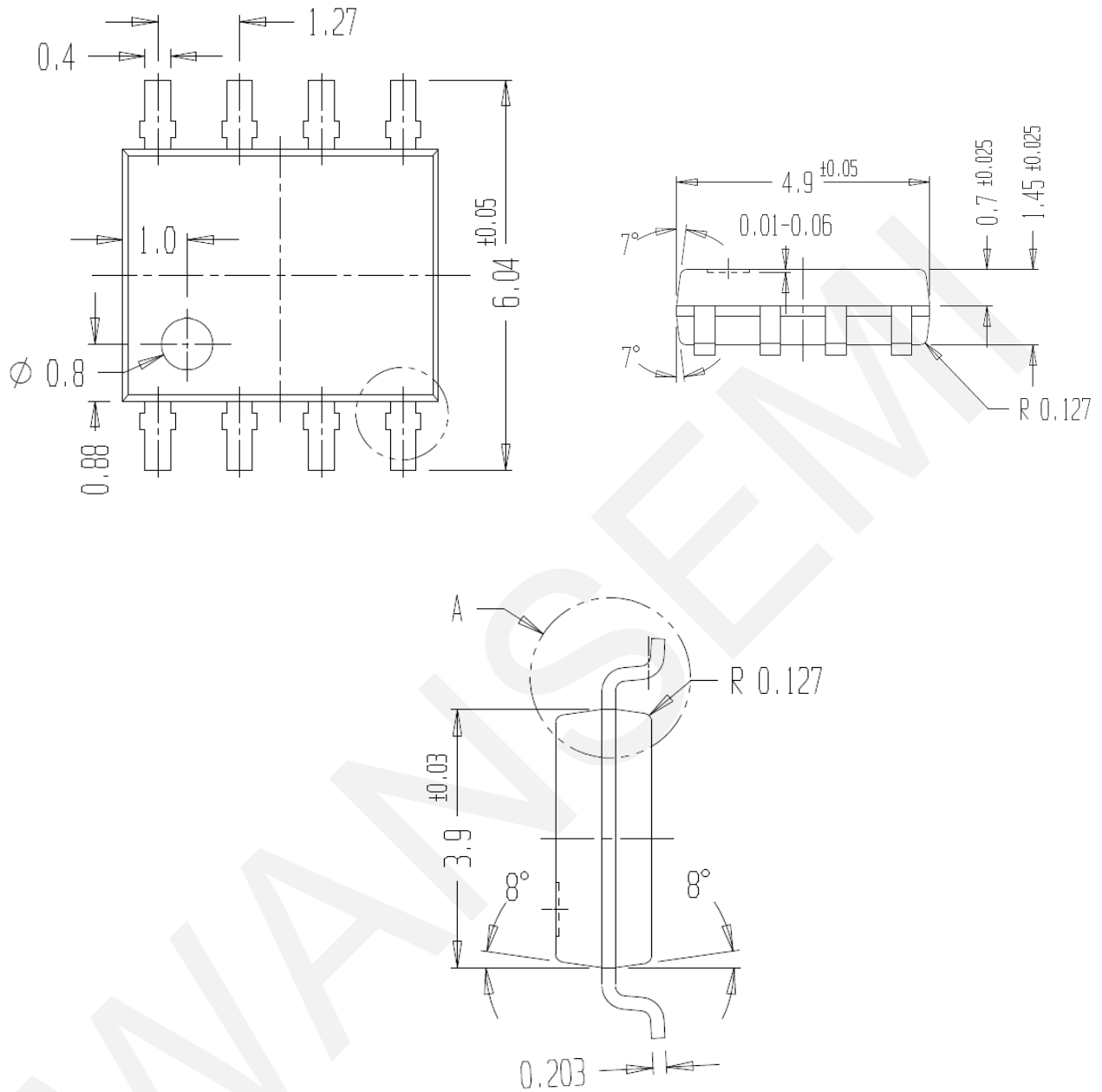
**Maximum Continuous Drain Current vs. Ambient Temperature**



**Maximum Effective Transient Thermal Impedance, Junction-to-Ambient**



### 7.Package Dimensions



## 9.Important Notice

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