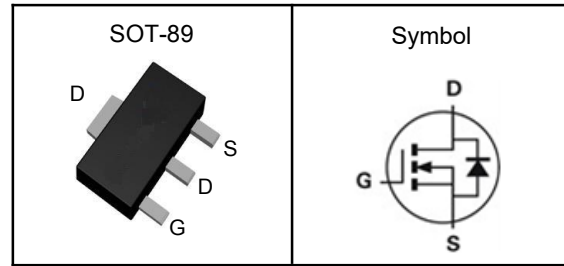


## N-Channel Enhancement Mode MOSFET

**: YUi fYg**

- Low Rdson for low conduction loss
- Reliable and Rugged
- ROHS Compliant & Halogen-Free

**D]b 8 YgW]dljcb**



### Applications

- Power Management in Desktop Computer
- DC/DC Converters

$V_{DSS}$	30	V
$R_{DS(ON)-Typ}$	19	m $\Omega$
$I_D$	7	A

### Absolute Maximum Ratings ( $T_J=25^\circ\text{C}$ , Unless Otherwise Noted)

Symbol	Parameter	N-Channel	Unit
$V_{DSS}$	Drain-Source Voltage	30	V
$V_{GSS}$	Gate-Source Voltage	$\pm 20$	V
$T_J$	Maximum Junction Temperature	-55 to 150	$^\circ\text{C}$
$T_{STG}$	Storage Temperature Range	-55 to 150	$^\circ\text{C}$
$I_S$	Diode Continuous Forward Current	1.7	A
$I_{DM}^{①}$	Pulse Drain Current Tested	42	A
$I_D$	Continuous Drain Current	$T_J=150^\circ\text{C}$ 7	A
$P_D$	Maximum Power Dissipation	$T_A=25^\circ\text{C}$ 1.25	W

### Thermal Characteristics

Symbol	Parameter	Rating	Unit
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient	90	$^\circ\text{C/W}$

Note ① : Max. current is limited by bonding wire.

Note ② : UIS tested and pulse width are limited by maximum junction temperature  $150^\circ\text{C}$ .

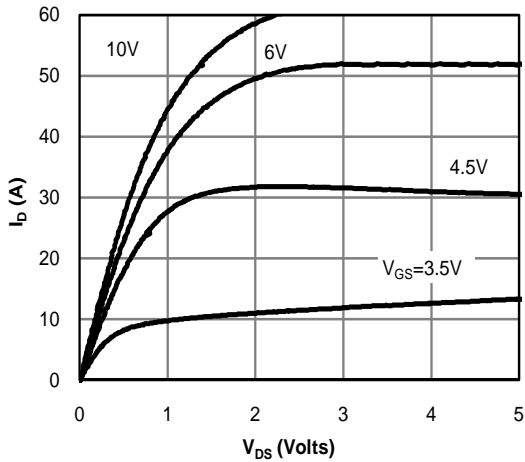
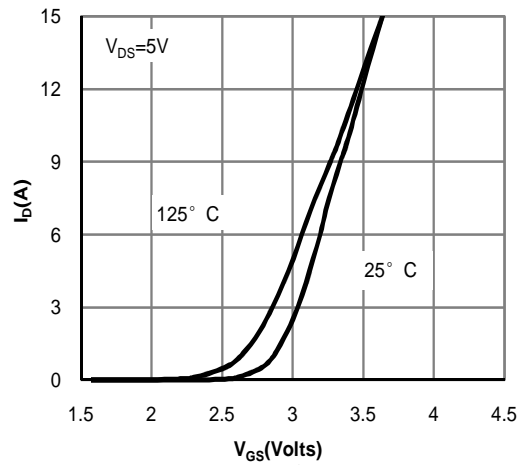
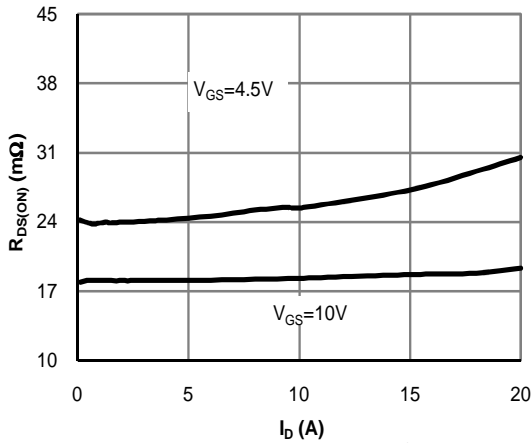
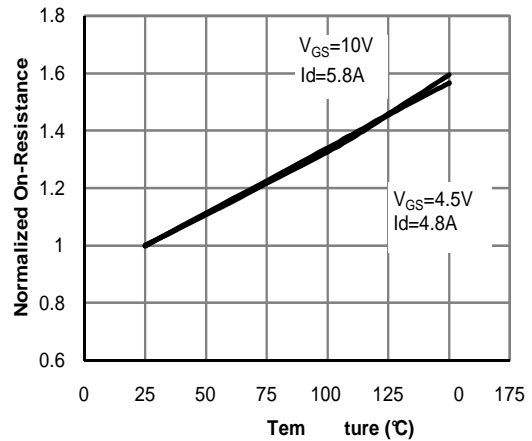
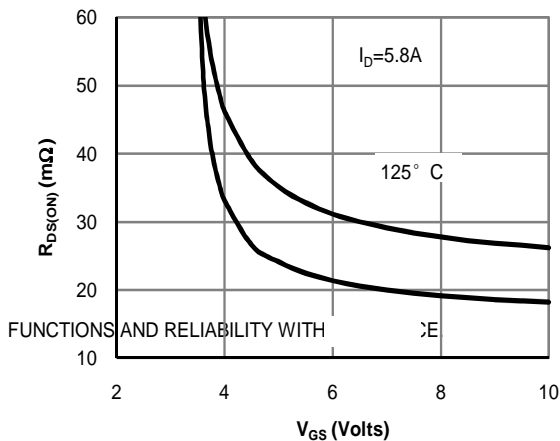
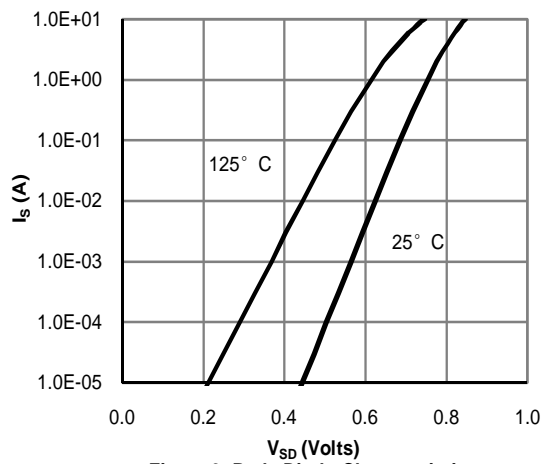
Note ③ : Surface Mounted on  $1\text{in}^2$  FR-4 board with 1oz.

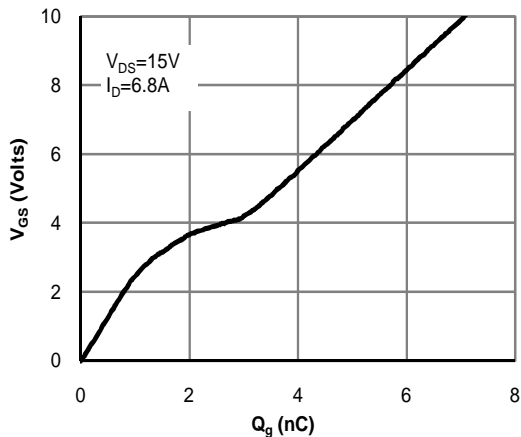
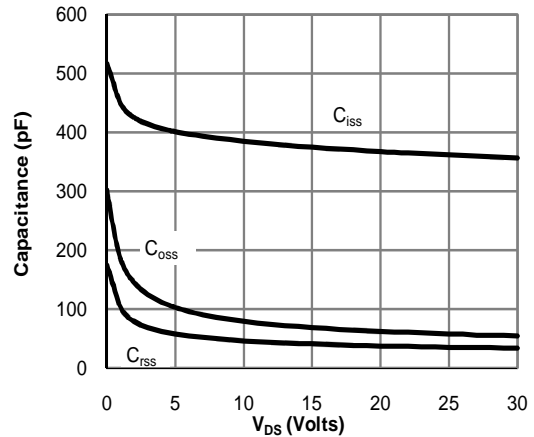
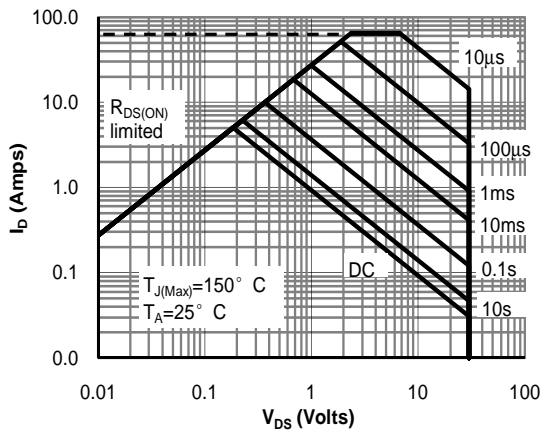
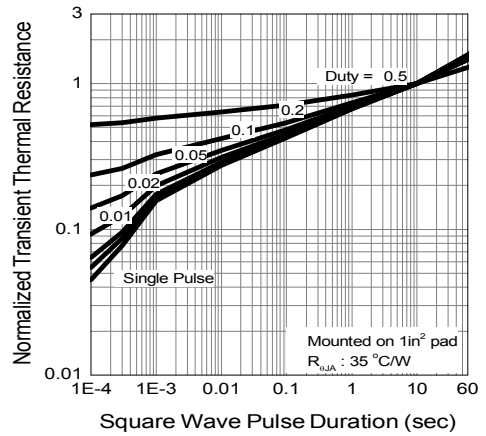
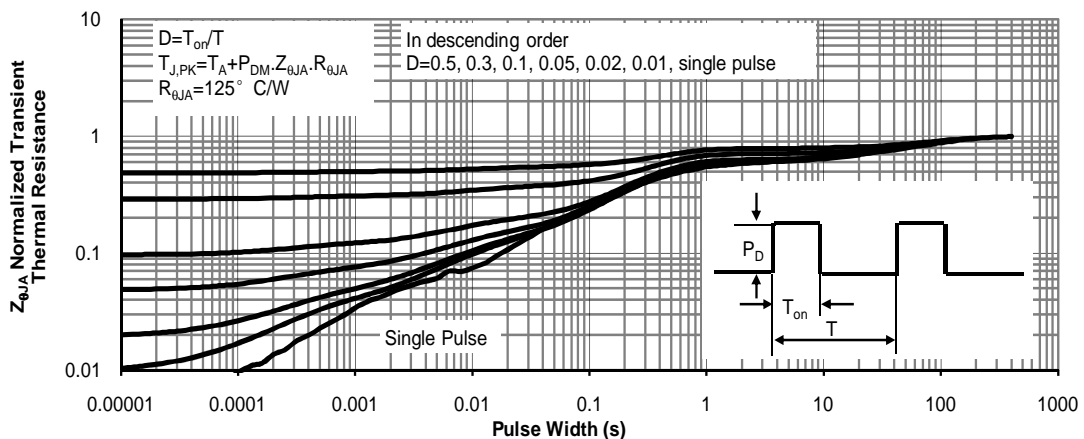
**N-Channel Enhancement Mode MOSFET****Electrical Characteristics** ( $T_J=25^{\circ}\text{C}$ , Unless Otherwise Noted)

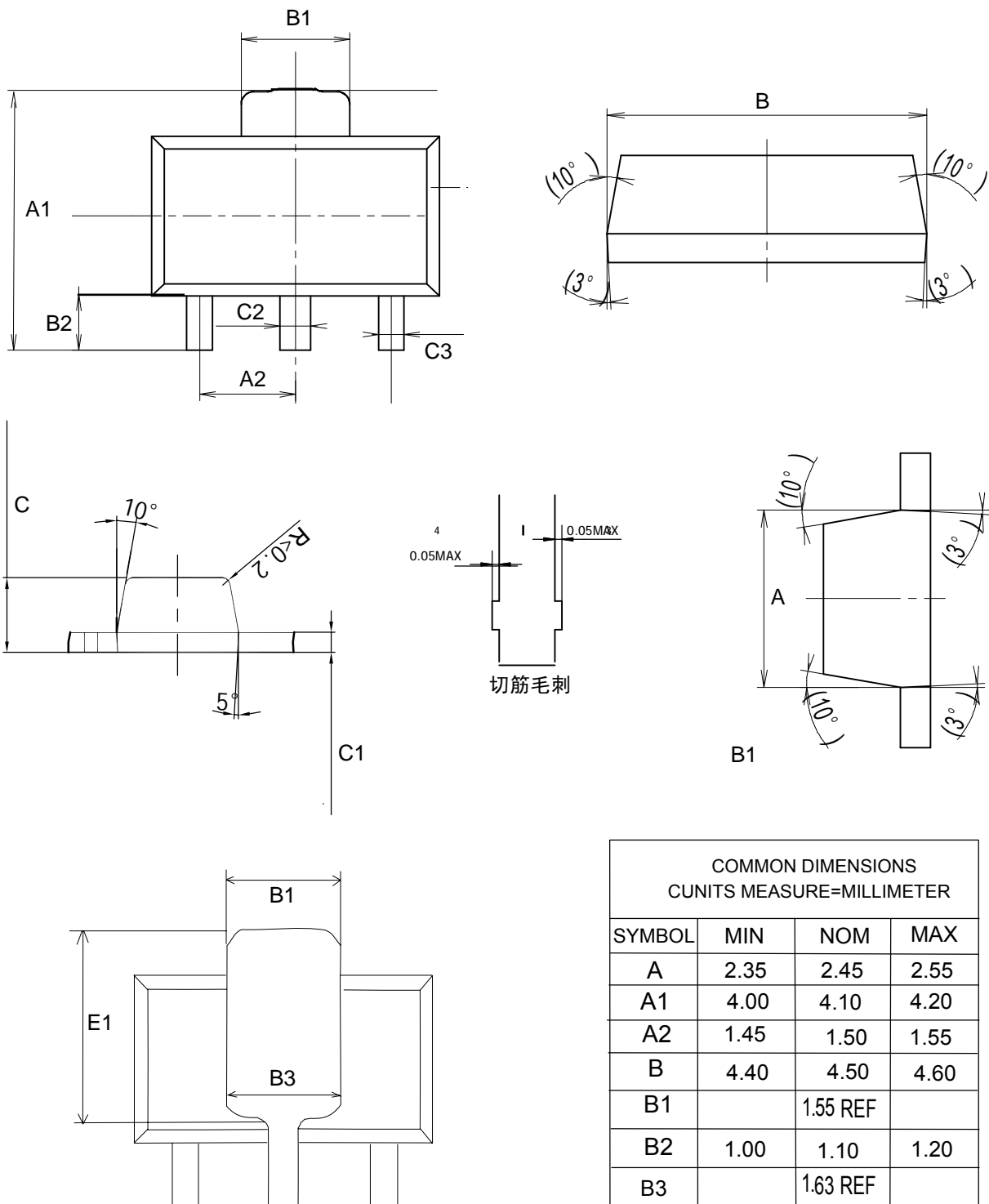
Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
<b>Static Electrical Characteristics</b>						
$BV_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	30	---	---	V
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{DS}=100V, V_{GS}=0V$	---	---	1	$\mu A$
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	0.8	---	2	V
$I_{GSS}$	Gate Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	---	---	$\pm 100$	nA
$R_{DS(on)}$	Drain-Source On-state Resistance	$V_{GS}=10V, I_D=5.7A$	---	19	25	$m\Omega$
		$V_{GS}=4.5V, I_D=5A$	---	25	35	$m\Omega$
<b>Dynamic Characteristics</b> <sup>⑤</sup>						
$C_{iss}$	Input Capacitance	$V_{GS}=0V, V_{DS}=15V, \text{Freq.}=1\text{MHz}$	---	416	---	pF
$C_{oss}$	Output Capacitance		---	62	---	
$C_{rss}$	Reverse Transfer Capacitance		---	40	---	
$T_{d(on)}$	Turn-on Delay Time	$V_{GS}=10V, V_{DS}=15V, R_G=6\Omega, I_D=1A, R_L=10\Omega$	---	7	---	nS
$T_r$	Turn-on Rise Time		---	10	---	
$T_{d(off)}$	Turn-off Delay Time		---	20	---	
$T_f$	Turn-off Fall Time		---	11	---	
$R_g$	Gate Resistance	$f = 1.0\text{MHz}, \text{open drain}$	---	4.5	---	$\Omega$
$Q_g$	Total Gate Charge	$V_{DS}=15V, V_{GS}=10V, I_D=1.6A$	---	6	---	nC
$Q_{gs}$	Gate-Source Charge		---	1.7	---	
$Q_{gd}$	Gate-Drain Charge		---	3.2	---	
<b>Source-Drain Characteristics</b> ( $T_J=25^{\circ}\text{C}$ )						
$V_{SD}$ <sup>④</sup>	Diode Forward Voltage	$I_S=1A, V_{GS}=0V$	---	0.7	1.0	V

Note ④ : Pulse test (pulse width $\leq 300\mu s$ , duty cycle $\leq 2\%$ ).

Note ⑤ : Guaranteed by design, not subject to production testing.

**N-Channel Enhancement Mode MOSFET**
**Typical Characteristics**

**Fig 1: On-Region Characteristics**

**Figure 2: Transfer Characteristics**

**Figure 3: On-Resistance vs. Drain Current and Gate Voltage**

**Figure 4: On-Resistance vs. Junction Temperature**

**Figure 5: On-Resistance vs. Gate-Source Voltage**

**Figure 6: Body-Diode Characteristics**

**N-Channel Enhancement Mode MOSFET**

**Figure 7: Gate-Charge Characteristics**

**Figure 8: Capacitance Characteristics**

**Figure 9: Maximum Forward Biased Safe Operating Area (Note E)**

**Figure 10 Thermal Transient Impedance**

**Figure 11: Normalized Maximum Transient Thermal Impedance**

**N-Channel Enhancement Mode MOSFET**
**SOT-89 Package Outline Data**


COMMON DIMENSIONS			
CUNITS MEASURE=MILLIMETER			
SYMBOL	MIN	NOM	MAX
A	2.35	2.45	2.55
A1	4.00	4.10	4.20
A2	1.45	1.50	1.55
B	4.40	4.50	4.60
B1		1.55 REF	
B2	1.00	1.10	1.20
B3		1.63 REF	
C	1.45	1.50	1.55
C1	0.39	0.40	0.41
C2	0.4	0.48	0.55
C3	0.35	0.4	0.45
E1	2.65	2.75	2.85