

产品编号: H1M25120P

SiC 功率 MOSFET

一代 MOSFET 技术, N 沟道增强型器件

V_{DS}	1200 V
$I_D@25^\circ C$	90A
$R_{DS(on)}$	25 m Ω

特性

- 高击穿电压低导通电阻
- 快开关速度
- 便于并联, 驱动简单
- 耐雪崩

应用优点

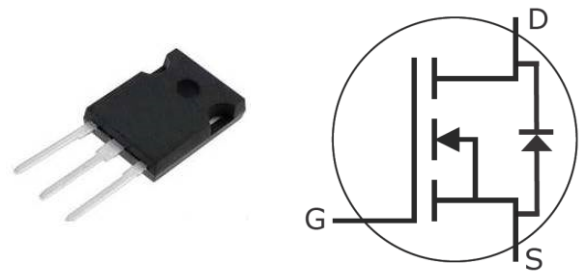
- 更高的系统效率
- 降低冷却需求
- 更高系统功率密度
- 提高系统工作频率

应用领域

- 新能源汽车电机控制器
- 充电桩
- 光伏逆变器
- 脉冲功率应用

额定参数 (除特别申明外 $T_C=25^\circ C$)

外观



产品型号	封装形式
H1M25120P	TO-247-3

符号	参数	值	单位	测试条件	备注
V_{DSmax}	源漏电压	1200	V	$V_{GS} = 0 V, I_D = 100 \mu A$	
V_{GSmax}	最高栅压	-10/+25	V	栅压最大值	
V_{GSop}	工作栅压	-5/+20	V	建议驱动电压	
$I_{D(DC)}$	连续导通电流	90	A	$V_{GS}=20V, T_C=25^\circ C$	Note 1
		60		$V_{GS}=20V, T_J=100^\circ C$	
I_{Dpulse}	脉冲导通电流	250	A	Pulse width t_p limited by T_{jmax}	
P_D	最高功率	463	W	$T_C=25^\circ C, T_J = 150^\circ C$	
T_J, T_{stg}	工作节温, 存储温度	-55/+150	$^\circ C$		
T_L	焊接温度	260	$^\circ C$	1.6mm (0.063") from case for 10s	

电参数 (除特别申明外 $T_C=25^\circ\text{C}$)

符号	参数名称	Min.	Typ.	Max.	单位	测试条件
$V_{(BR)DSS}$	源漏击穿电压	1200	/	/	V	$V_{GS}=0V, I_{DS}=100\mu A$
$V_{GS(th)}$	栅阈值电压	1.9	2.4	/	V	$V_{DS}=V_{GS}, I_{DS}=15mA,$
		/	1.6	/		$V_{DS}=V_{GS}, I_{DS}=15mA, T_J=150^\circ\text{C}$
I_{DSS}	零栅压漏极电流	/	1	100	μA	$V_{DS}=1200V, V_{GS}=0V$
I_{GSS}	栅源漏电流	/	/	100	nA	$V_{GS}=20V, V_{DS}=0V,$
$R_{DS(on)}$	通态源漏电阻	/	25	34	m Ω	$V_{GS}=20V, I_D=50A$
		/	43	/		$V_{GS}=20V, I_D=50A, T_J=150^\circ\text{C}$
g_{fs}	跨导	/	22.8	/	S	$V_{DS}=20V, I_D=50A$
		/	21.2	/		$V_{DS}=20V, I_D=50A, T_J=150^\circ\text{C}$
C_{iss}	输入电容	/	3600	/	pF	$V_{GS}=0V$
C_{oss}	输出电容	/	240	/		$V_{DS}=1000V$
C_{rss}	反向转换电容	/	16	/		$f=1\text{MHz}$
E_{oss}	Coss 存储能量	/	122	/		$V_{AC}=25\text{mV}$
E_{AS}	单次雪崩耐量	/	3.5	/	J	$I_D=50A, V_{DD}=50V$
E_{ON}	开通开关损耗	/	1.8	/	mJ	$V_{DS}=800V, V_{GS}=-5/20V,$ $I_D=50A, R_{G(ext)}=2.5\Omega, L=412\mu H$
E_{OFF}	关断开关损耗	/	1.5	/		
$t_{d(on)}$	上升延迟时间	/	16	/	ns	$V_{DD}=800V, V_{GS}=-5/20V$ $I_D=50A,$ $R_{G(ext)}=2.5\Omega, R_L=16\Omega$
t_r	上升时间	/	16.2	/		
$t_{d(off)}$	下降延迟时间	/	33	/		
t_f	下降时间	/	7.8	/		
$R_{G(int)}$	内部栅阻		2		Ω	$f=1\text{MHz}, V_{AC}=25\text{mV}, \text{ESR of CISS}$
Q_{gs}	栅源电荷		54		nC	$V_{DS}=800V, V_{GS}=-5/20V$ $I_D=50A$
Q_{gd}	栅漏电荷		29			
Q_g	总栅电荷		195			

体二极管特性 (除特别申明外 $T_C=25^\circ\text{C}$)

参数	符号	最小值	典型值	最大值	单位	测试条件	备注
V_{SD}	正向压降	/	5.4	/	V	$V_{GS}=-5V, I_F=25A$	
		/	5.1	/	V	$V_{GS}=-5V, I_F=25A, T_J=150^\circ\text{C}$	
I_S	连续二极管正向电流	/	/	90	A	$T_C=25^\circ\text{C}$	
t_{rr}	反向恢复时间	/	55	/	μS	$V_{DS}=800V$	
Q_{rr}	反向恢复电荷	/	220	/	μC	$V_{GS}=-5V/20V, I_F=25A$	
I_{rrm}	反向恢复峰值电流	/	6.7	/	A	$di/dt=1000A/us$	

器件典型特性

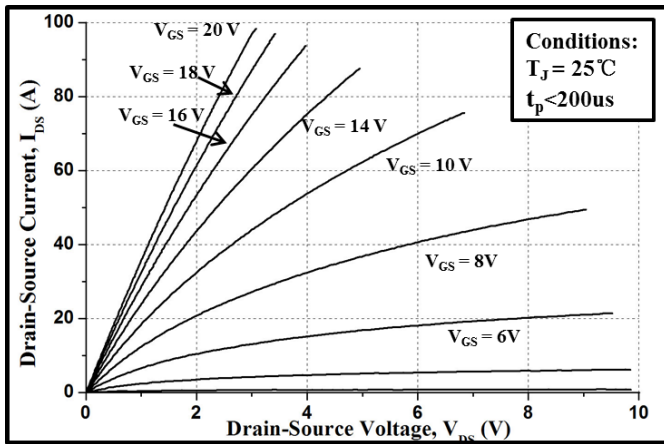


Figure 1. Typical Output Characteristics $T_J=25^\circ\text{C}$

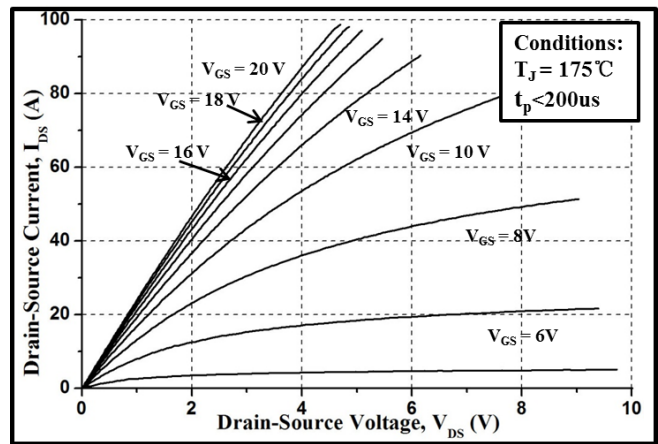


Figure 2. Typical Output Characteristics $T_J=175^\circ\text{C}$

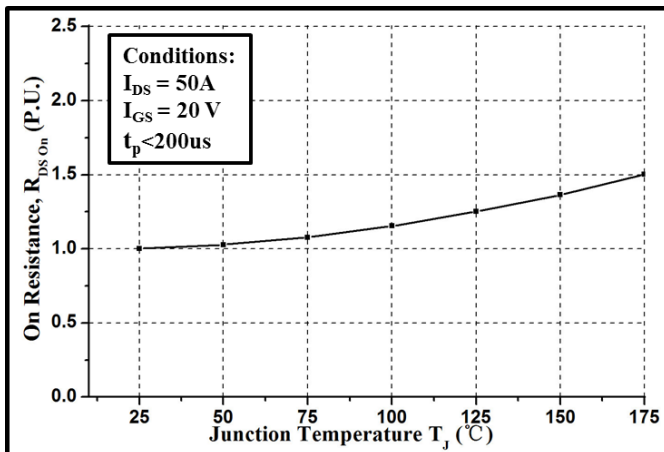


Figure 3. Normalized On-Resistance vs. Temperature

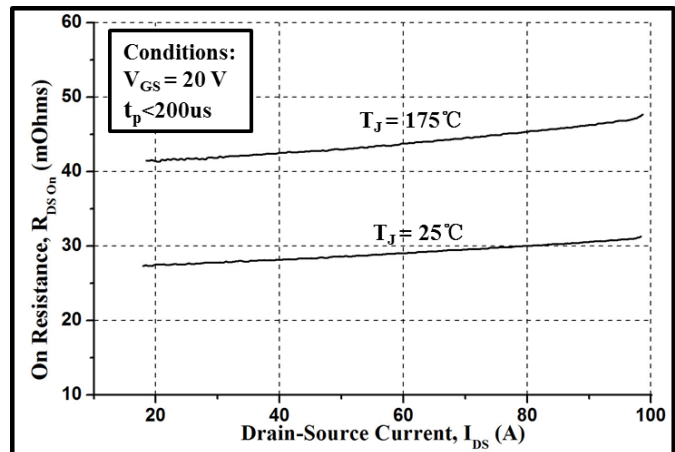


Figure 4. On-Resistance vs. Drain Current

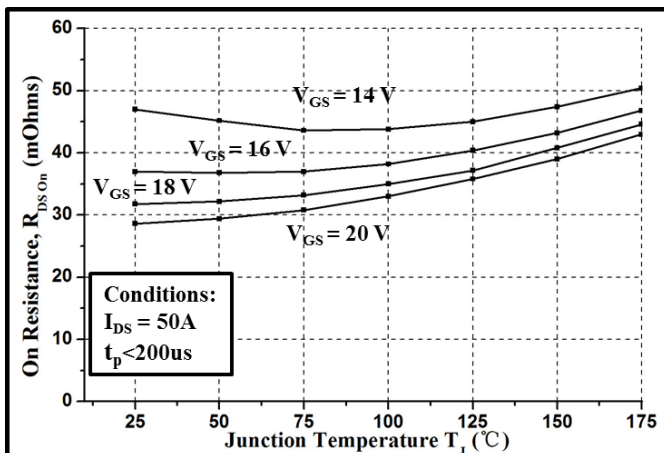


Figure 5. On-Resistance vs. Temperature

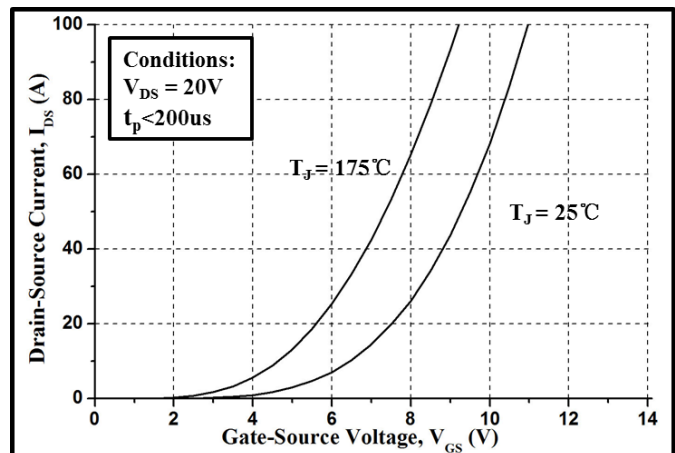


Figure 6. Typical Transfer Characteristics

器件典型特性

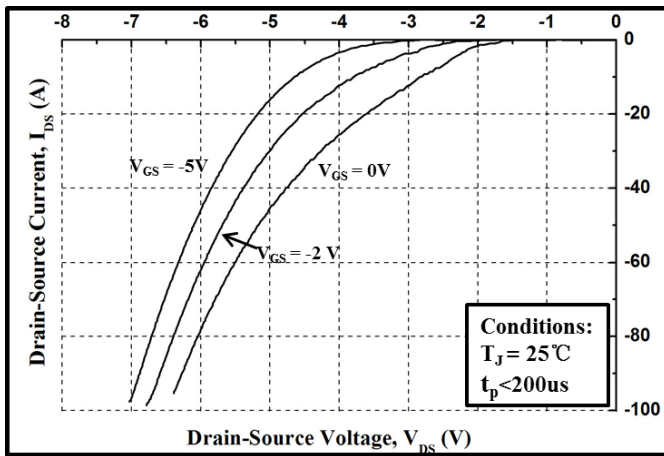


Figure 7. Body Diode Characteristics at 25° C

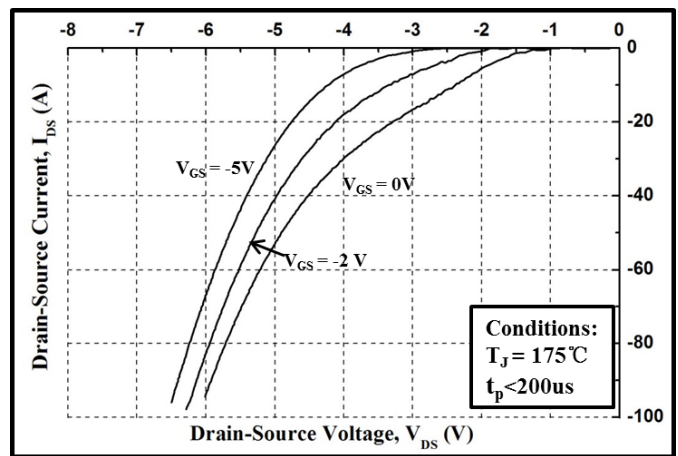


Figure 7. Body Diode Characteristics at 175° C

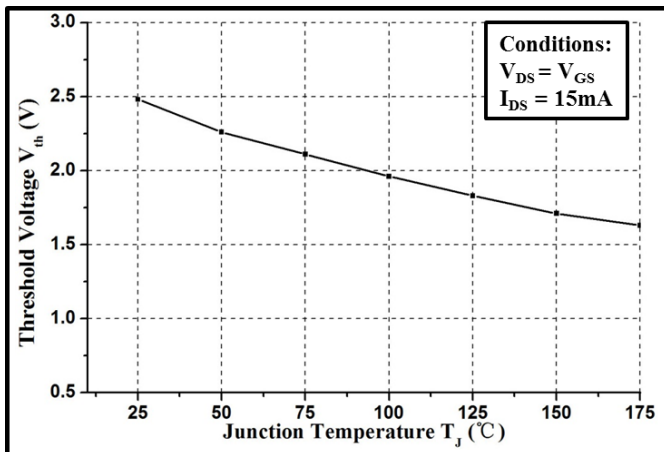


Figure 9. Gate Threshold Voltage vs. Temperature

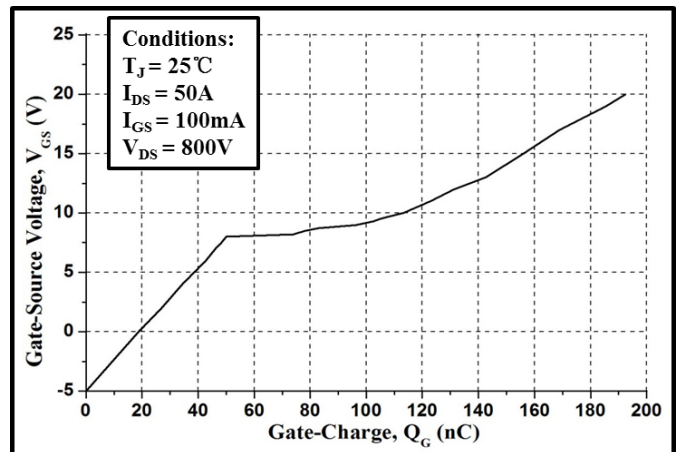


Figure 10. Gate Charge Characteristic

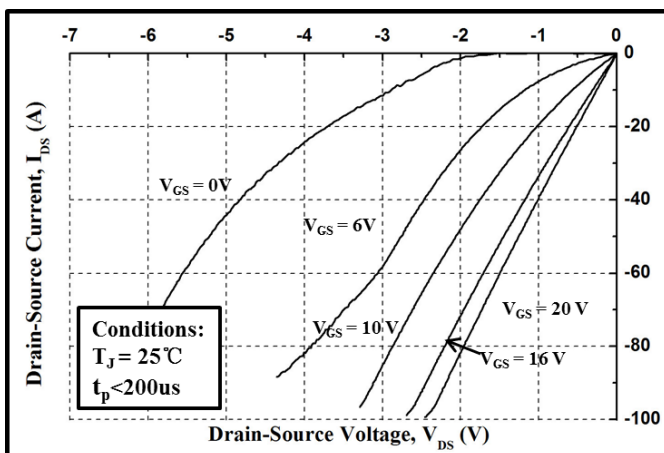


Figure 11. 3rd Quadrant Characteristics at 25° C

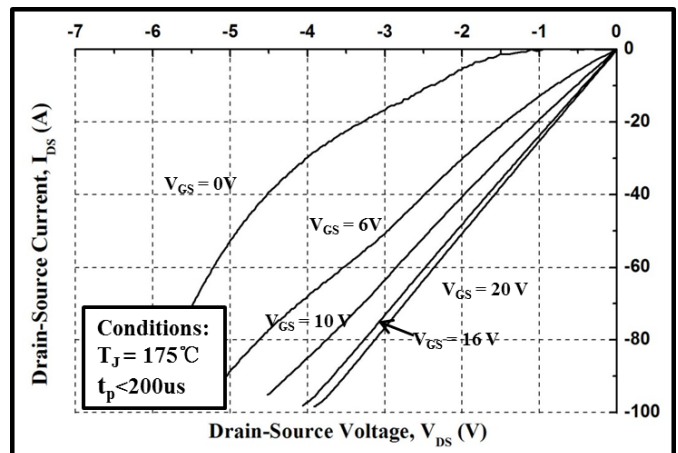


Figure 12. 3rd Quadrant Characteristics at 175° C

器件典型特性

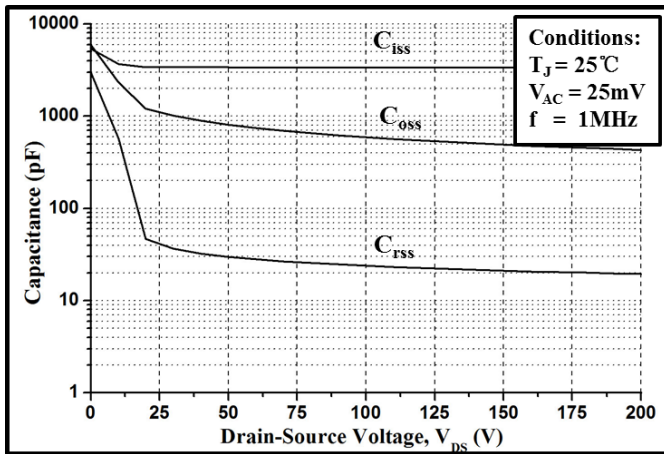


Figure 13. Capacitances vs. Drain-Source Voltage

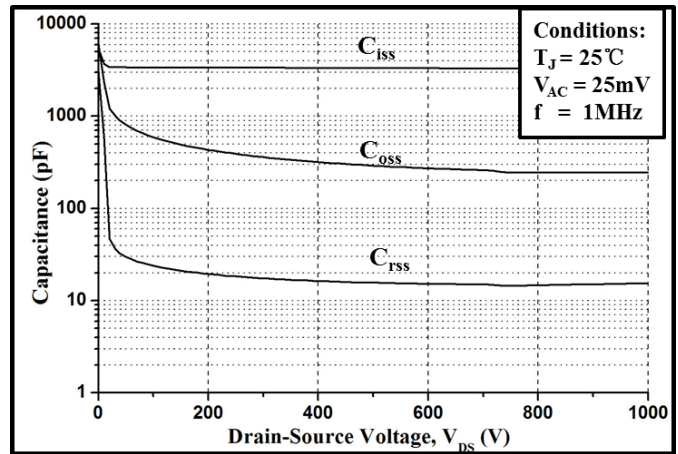


Figure 14. Capacitances vs. Drain-Source Voltage

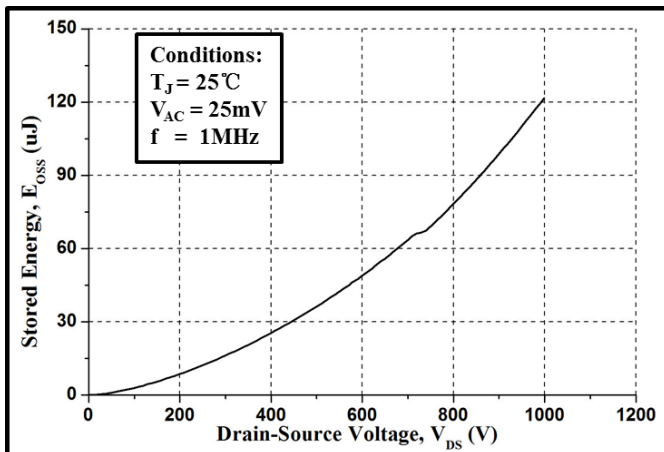
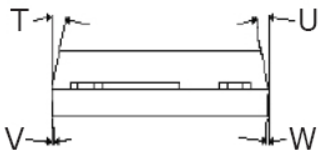
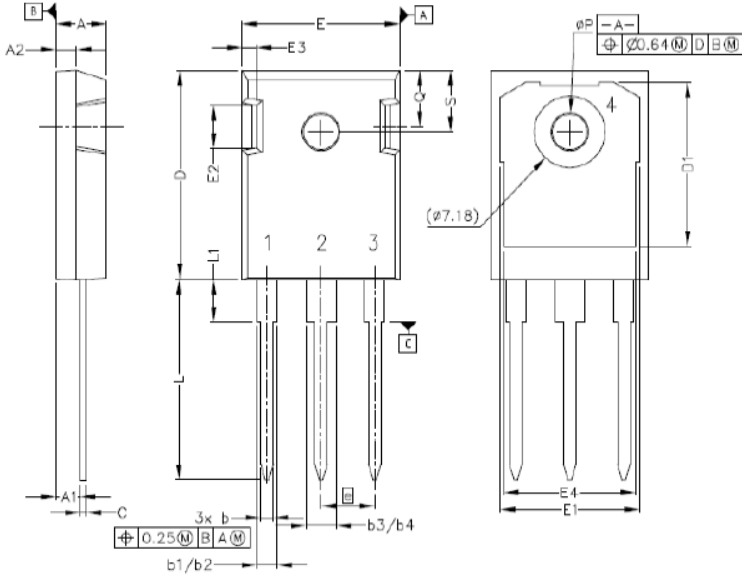


Figure 15. Output Capacitor Stored Energy

封装尺寸参数

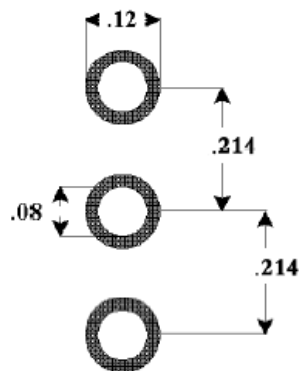


Pinout Information:

- Pin 1 = Gate
- Pin 2, 4 = Drain
- Pin 3 = Source

POS	Inches		Millimeters	
	Min	Max	Min	Max
A	.190	.205	4.83	5.21
A1	.090	.100	2.29	2.54
A2	.075	.085	1.91	2.16
b	.042	.052	1.07	1.33
b1	.075	.095	1.91	2.41
b2	.075	.085	1.91	2.16
b3	.113	.133	2.87	3.38
b4	.113	.123	2.87	3.13
c	.022	.027	0.55	0.68
D	.819	.831	20.80	21.10
D1	.640	.695	16.25	17.65
D2	.037	.049	0.95	1.25
E	.620	.635	15.75	16.13
E1	.516	.557	13.10	14.15
E2	.145	.201	3.68	5.10
E3	.039	.075	1.00	1.90
E4	.487	.529	12.38	13.43
e	.214 BSC		5.44 BSC	
N	3		3	
L	.780	.800	19.81	20.32
L1	.161	.173	4.10	4.40
ØP	.138	.144	3.51	3.65
Q	.216	.236	5.49	6.00
S	.238	.248	6.04	6.30
T	9°	11°	9°	11°
U	9°	11°	9°	11°
V	2°	8°	2°	8°
W	2°	8°	2°	8°

建议焊接 Pad 尺寸



TO-247-3