

## N-Channel Super Junction Power MOSFET III

### General Description

The series of devices use advanced super junction technology and design to provide excellent  $R_{DS(ON)}$  with low gate charge. This super junction MOSFET fits the industry's AC-DC SMPS requirements for PFC, AC/DC power conversion, and industrial power applications.

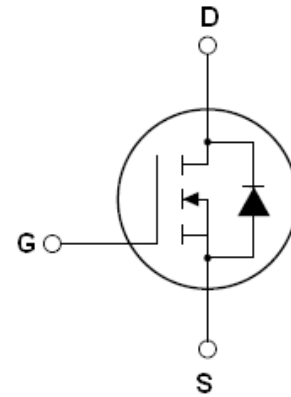
### Features

- New technology for high voltage device
- Low on-resistance and low conduction losses
- Small package
- Ultra Low Gate Charge cause lower driving requirements
- 100% Avalanche Tested
- ROHS compliant

### Application

- Power factor correction (PFC)
- Switched mode power supplies(SMPS)
- Uninterruptible Power Supply (UPS)

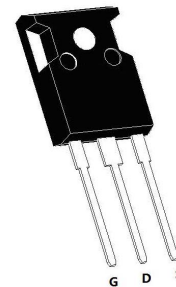
$V_{DS}$	650	V
$R_{DS(ON) TYP.}$	36	m $\Omega$
$I_D$	75	A



Schematic diagram

### Package Marking And Ordering Information

Device	Device Package	Marking
HMS75N65T	TO-247	HMS75N65T



TO-247

Table 1. Absolute Maximum Ratings ( $T_c=25^\circ\text{C}$ )

Parameter	Symbol	Value	Unit
Drain-Source Voltage ( $V_{GS}=0V$ )	$V_{DS}$	650	V
Gate-Source Voltage ( $V_{DS}=0V$ ) AC ( $f>1$ Hz)	$V_{GS}$	$\pm 30$	V
Continuous Drain Current at $T_c=25^\circ\text{C}$	$I_{D(DC)}$	75	A
Continuous Drain Current at $T_c=100^\circ\text{C}$	$I_{D(DC)}$	47	A
Pulsed drain current (Note 1)	$I_{DM(pluse)}$	300	A
Maximum Power Dissipation( $T_c=25^\circ\text{C}$ )	$P_D$	510	W
Derate above $25^\circ\text{C}$		4.08	W/ $^\circ\text{C}$
Single pulse avalanche energy (Note 2)	$E_{AS}$	1936	mJ
Avalanche current (Note 1)	$I_{AR}$	28	A
Repetitive Avalanche energy, $t_{AR}$ limited by $T_{jmax}$ (Note 1)	$E_{AR}$	2.5	mJ



TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS (curves)

Figure1. Safe Operating Area

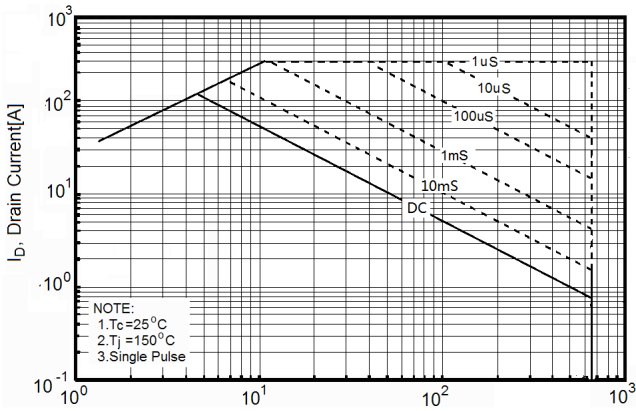


Figure3. Source-Drain Diode Forward Voltage

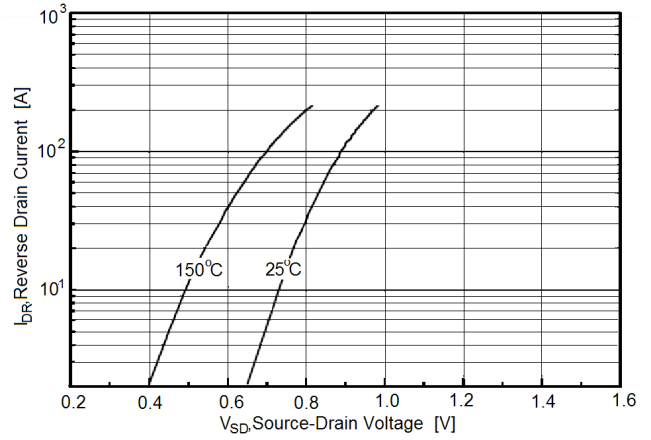


Figure4. Output Characteristics

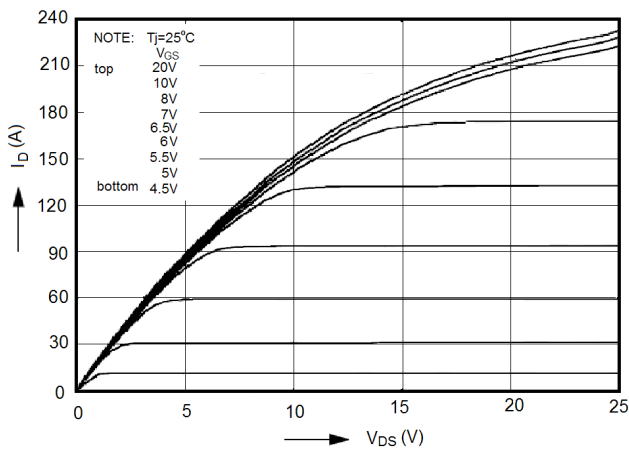


Figure5. Transfer Characteristics

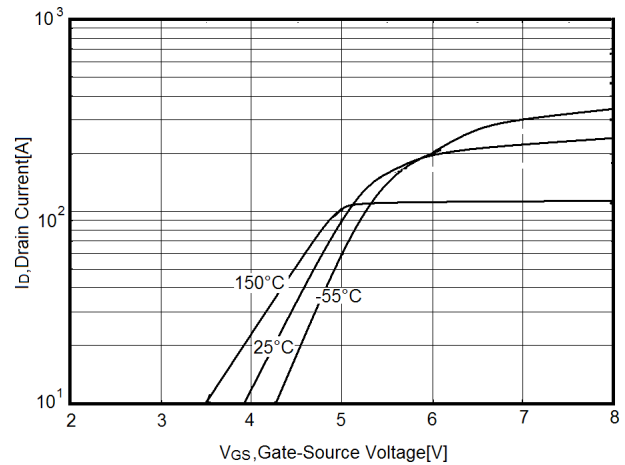


Figure6. Static drain-source on resistance

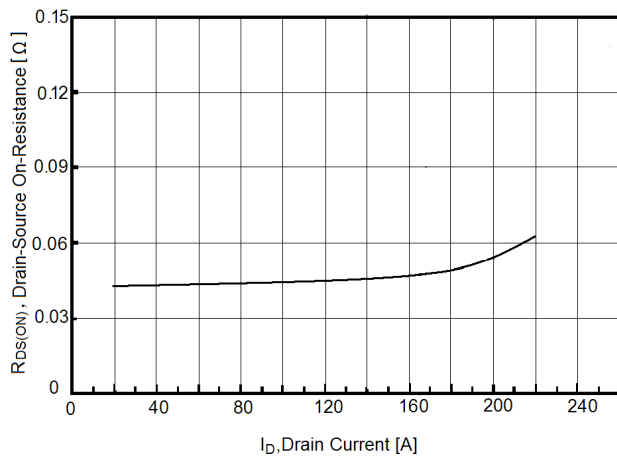


Figure7.  $R_{DS(ON)}$  vs Junction Temperature

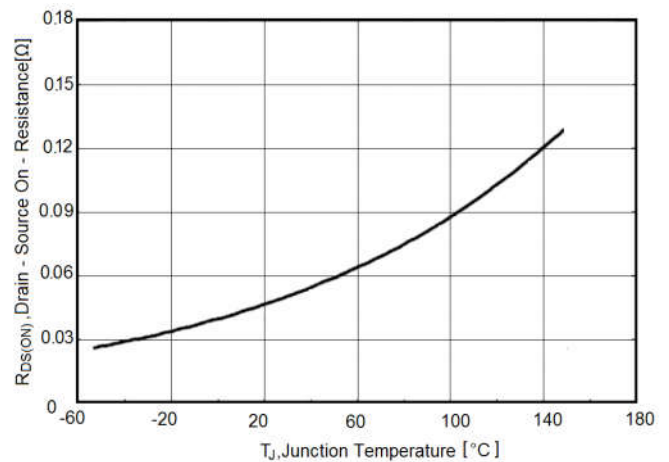


Figure8.  $BV_{DSS}$  vs Junction Temperature

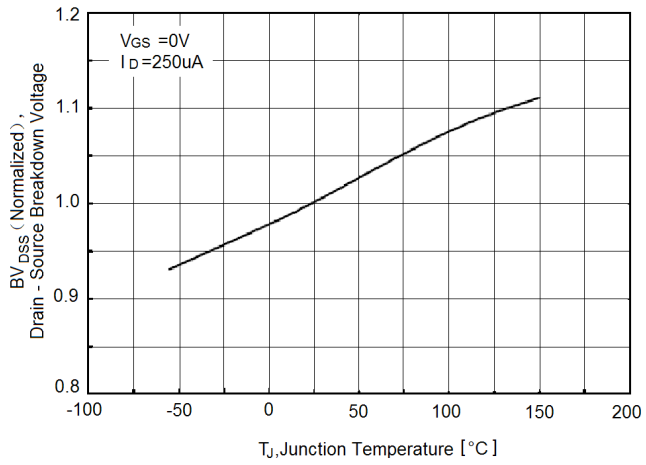
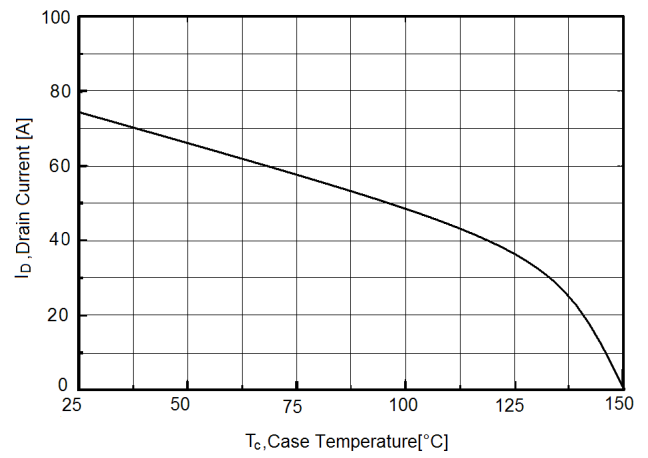
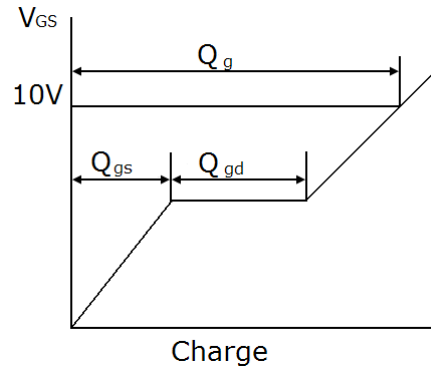
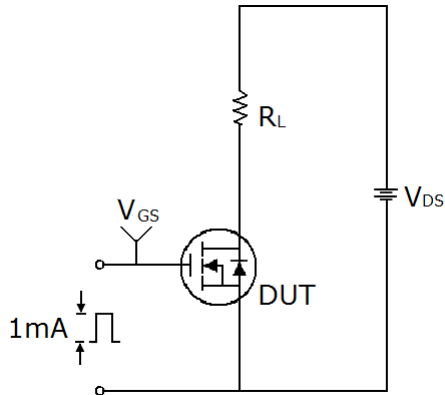


Figure9. Maximum  $I_D$  vs Junction Temperature

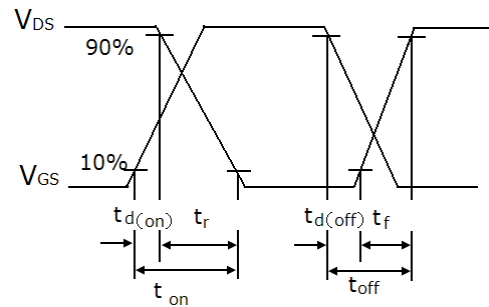
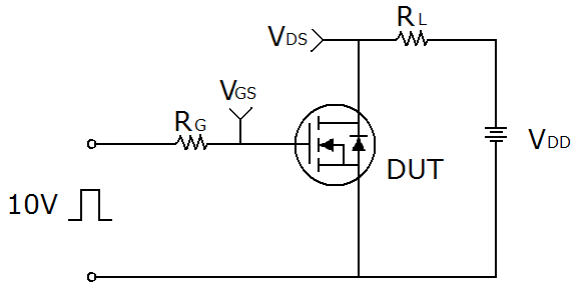


## Test circuit

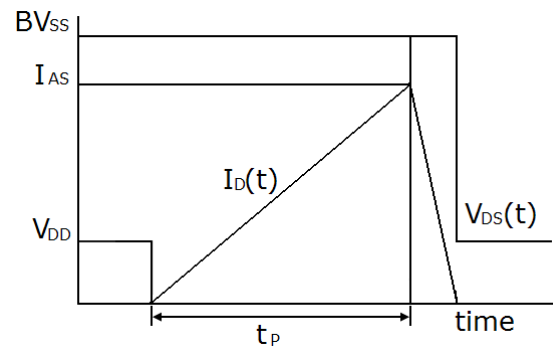
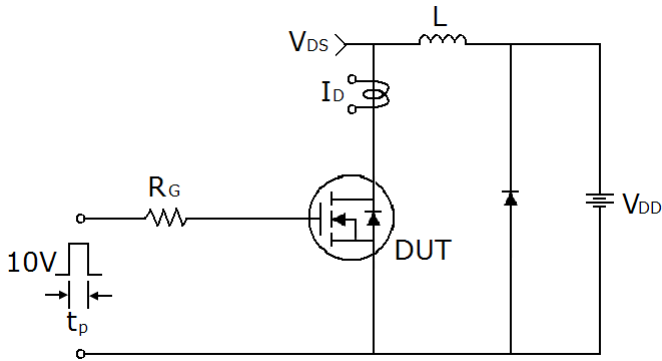
### 1) Gate charge test circuit & Waveform



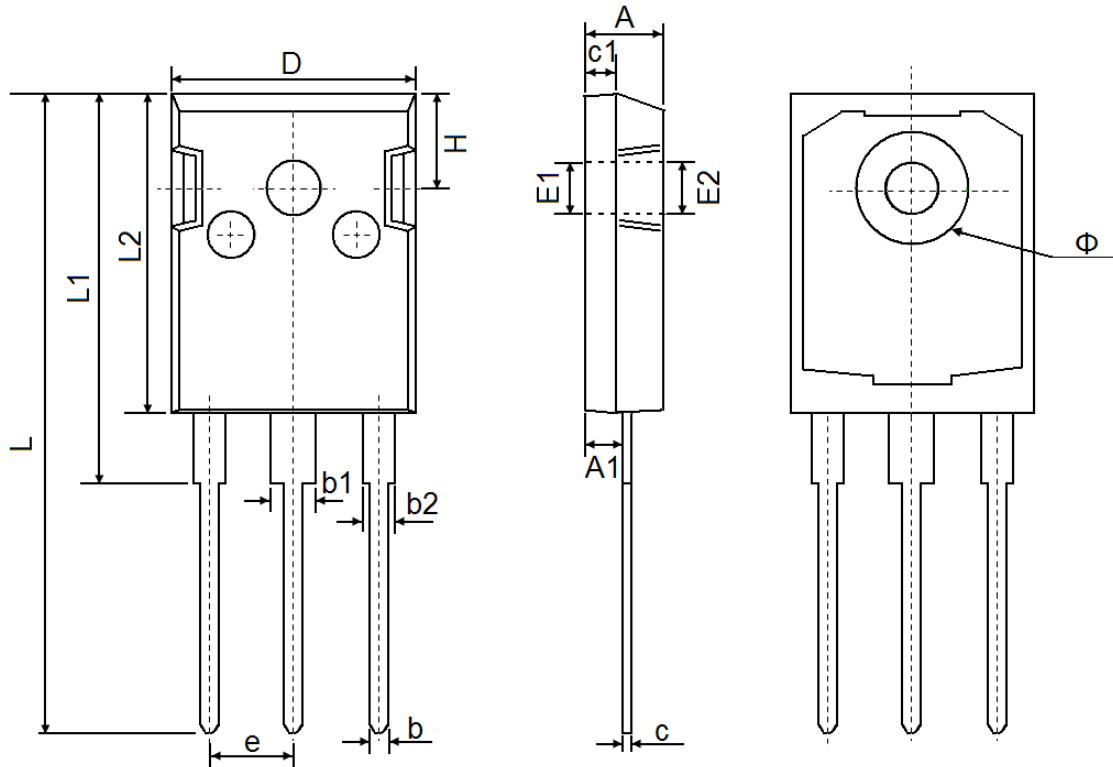
### 2) Switch Time Test Circuit:



### 3) Unclamped Inductive Switching Test Circuit & Waveforms



## TO-247 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.850	5.150	0.191	0.200
A1	2.200	2.600	0.087	0.102
b	1.000	1.400	0.039	0.055
b1	2.800	3.200	0.110	0.126
b2	1.800	2.200	0.071	0.087
c	0.500	0.700	0.020	0.028
c1	1.900	2.100	0.075	0.083
D	15.450	15.750	0.608	0.620
E1	3.500 REF		0.138 REF	
E2	3.600 REF		0.142 REF	
L	40.900	41.300	1.610	1.626
L1	24.800	25.100	0.976	0.988
L2	20.300	20.600	0.799	0.811
Φ	7.100	7.300	0.280	0.287
e	5.450 TYP		0.215 TYP	
H	5.980 REF		0.235 REF	