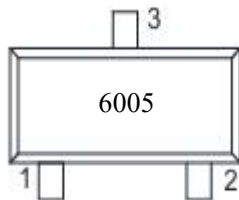
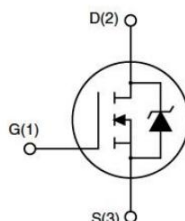


Features ➤ Super Low Gate Charge ➤ Green Device Available ➤ Excellent Cdv/dt effect decline ➤ Advanced high cell density Trench technology	Bvdss	Rdson	ID
	60V	40mΩ	5A
	Application ➤ Battery protection ➤ Load Switch ➤ Uninterruptible power supply		

RoHS

Package
  

1. Marking and pin assignment

2. SOT23-3L top view

3. Schematic diagram

Package Marking and Ordering Information

Device Marking	Device	Device Package	Quantity
6005	6005	SOT23-3L	3000

Absolute Maximum Ratings (T_C=25°C unless otherwise specified)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V _{DS}	60	V
Gate-Source Voltage	V _{GS}	±20	V
Continuous Drain Current	I _D @T _C =25°C	5	A
Continuous Drain Current	I _D @T _C =100°C	3.8	A
Pulsed Drain Current ¹	I _{DM}	30	A
Total Power Dissipation	P _D @T _C =25°C	3	W
Storage Temperature Range	T _{STG}	-55 to 175	°C
Operating Junction Temperature Range	T _J	-55 to 175	°C

Thermal Resistance Ratings

Parameter	Symbol	Value	Unit
Thermal Resistance Junction-ambient	R _{θJA}	-	°C/W
Thermal Resistance Junction-Case	R _{θJC}	73	°C/W



Ordering Information

Ordering Number	Package	Pin Assignment			Packing
Halogen Free		G	S	D	
HL6005	SOT23-3L	1	2	3	Tape Reel

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	60	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=60V, V_{GS}=0V$	-	-	1.0	μA
Gate to Body Leakage Current	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 20V$	-	-	± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1.0	1.6	2.5	V
Static Drain to Source On-State Resistance ³	$R_{DS(on)}$	$V_{GS}=10V, I_D=15A$	-	40	49	m Ω
		$V_{GS}=4.5V, I_D=10A$	-	45	63	
Input Capacitance	C_{iss}	$V_{DS}=25V, V_{GS}=0V$ $f=1.0\text{MHz}$	-	825	-	pF
Output Capacitance	C_{oss}		-	49	-	pF
Reverse Transfer Capacitance	C_{rss}		-	41	-	pF
Turn-ON Delay Time	$t_{d(on)}$	$V_{DD}=30V, I_D=2A$ $R_{GEN}=3\Omega, V_{GS}=10V$ $R_L=6.7\Omega$	-	5	-	ns
Rise Time	t_r		-	2.6	-	ns
Turn-OFF Delay Time	$t_{d(off)}$		-	16.1	-	ns
Fall Time	t_f		-	2.3	-	ns
Total Gate Charge	Q_g	$V_{DS}=30V, I_D=4.5A$ $V_{GS}=10V$	-	14	-	nC
	Q_{gs}		-	2.9	-	nC
	Q_{gd}		-	5.2	-	nC
Body Diode Reverse Recovery Charge	T_{rr}	$T_J=25^{\circ}\text{C}, I_F=15A$ $dI/dt=100A/\mu s$	-	35	-	ns
Body Diode Reverse Recovery Time	Q_{rr}		-	53	-	nC
Continuous Diode Forward Current	I_S		-	-	5	A
Continuous Diode Pulse Current	I_{SM}		-	-	30	A
Drain to Source Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=15A$	-	-	1.2	V

Notes:

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
2. EAS condition : $T_J=25^{\circ}\text{C}, V_{DD}=30V, V_G=10V, L=0.5\text{mH}, R_g=25\Omega, I_{AS}=6.1A$
3. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 0.5\%$

Typical Characteristics

Figure1: Output Characteristics

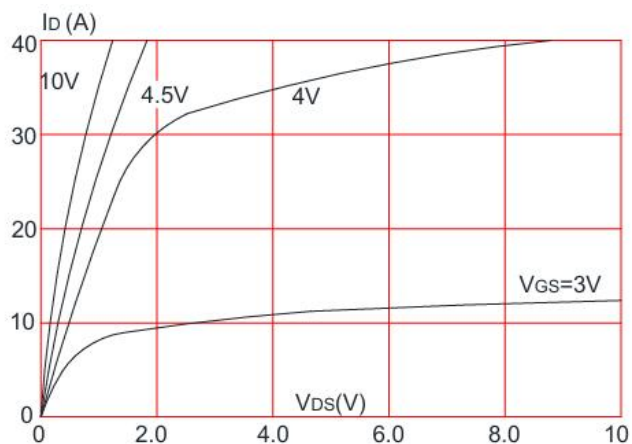


Figure 2: Typical Transfer Characteristics

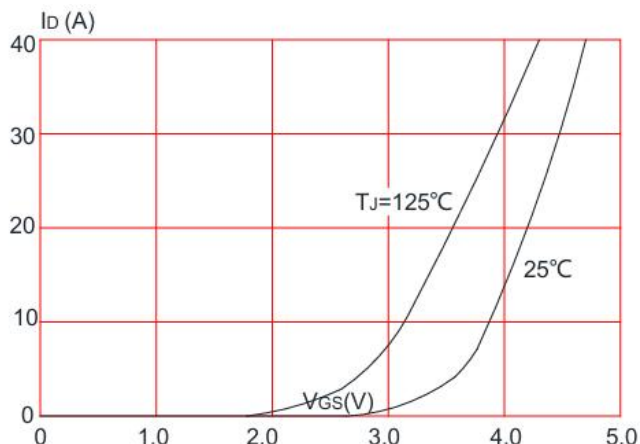


Figure3: On-resistance vs. Drain Current

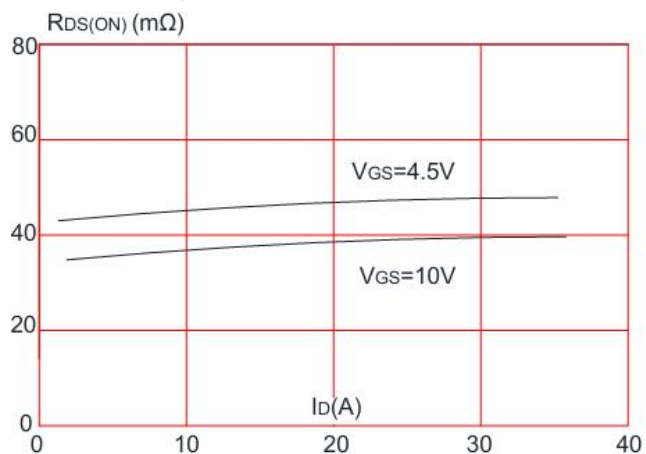


Figure 4: Body Diode Characteristics

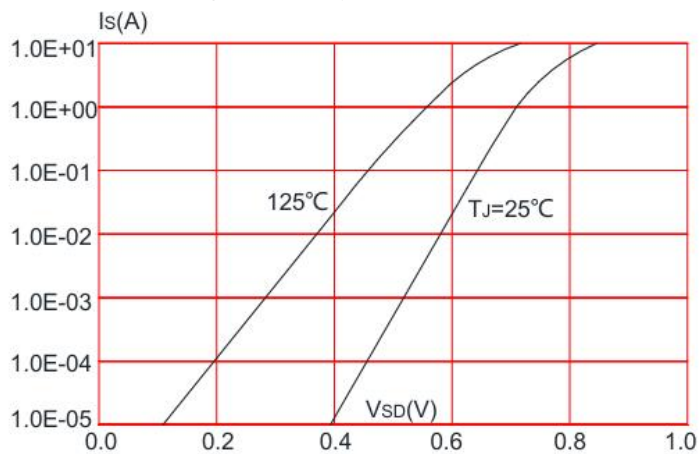


Figure5: Gate Charge Characteristics

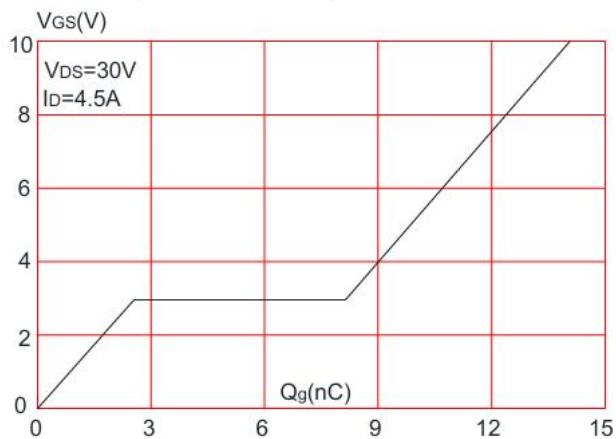


Figure 6: Capacitance Characteristics

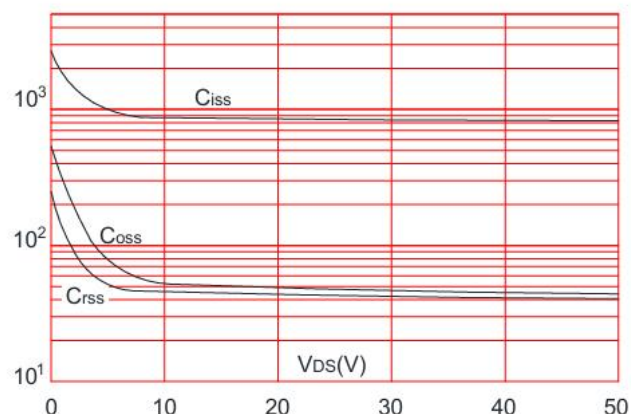


Figure7: Normalized Breakdown Voltage vs. Junction Temperature

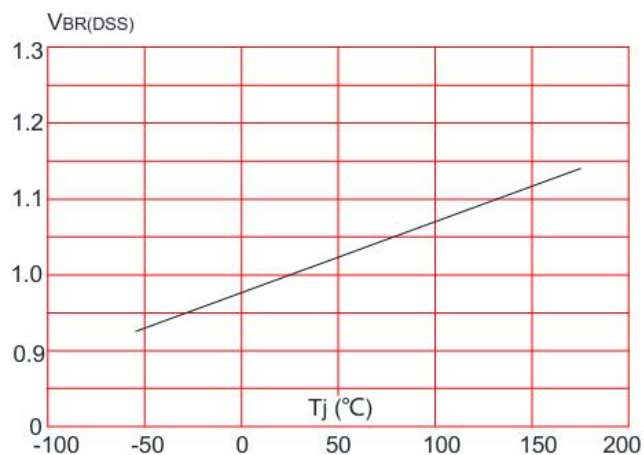


Figure 8: Normalized on Resistance vs. Junction Temperature

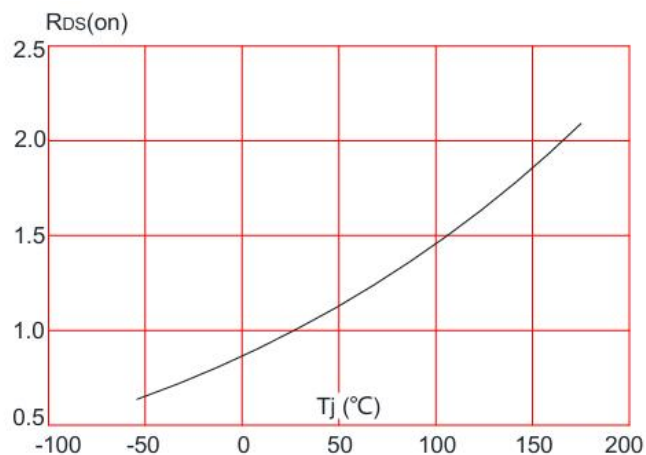


Figure9: Maximum Safe Operating Area

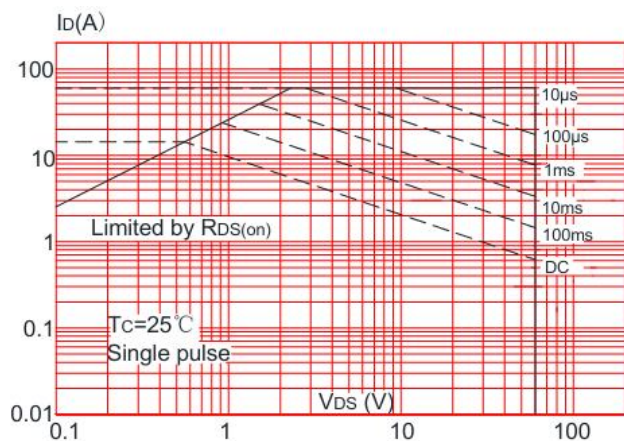


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

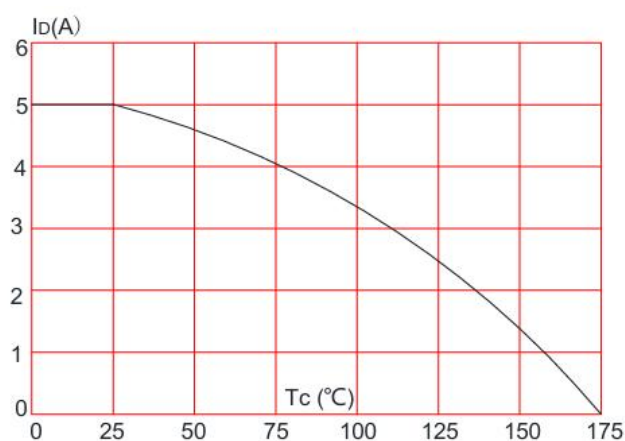
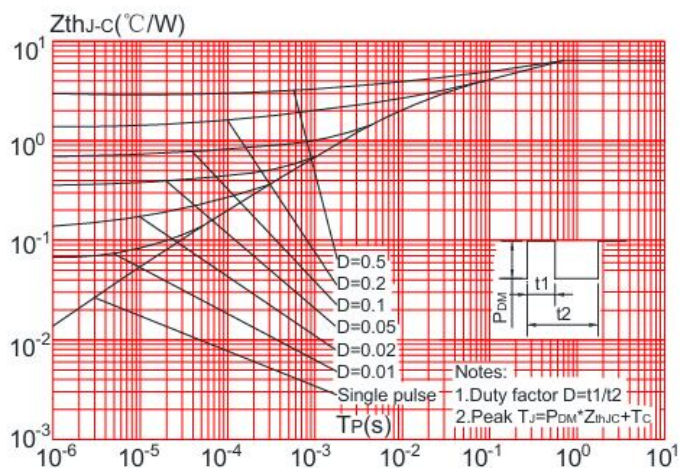
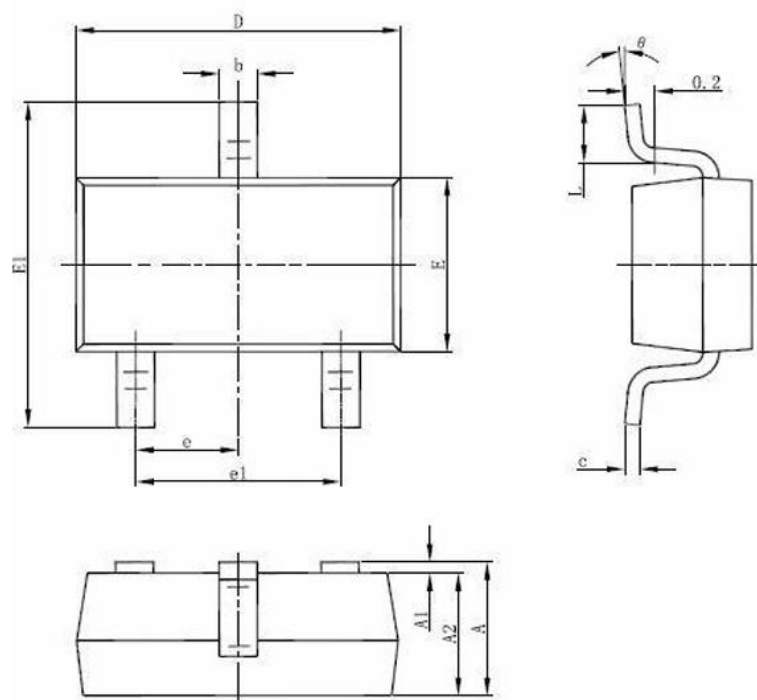


Figure11: Maximum Effective Transient Thermal Impedance, Junction-to-Case



Package Dimensions SOT23-3L



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
E	1.500	1.700	0.059	0.067
E1	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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